

The Iron Age

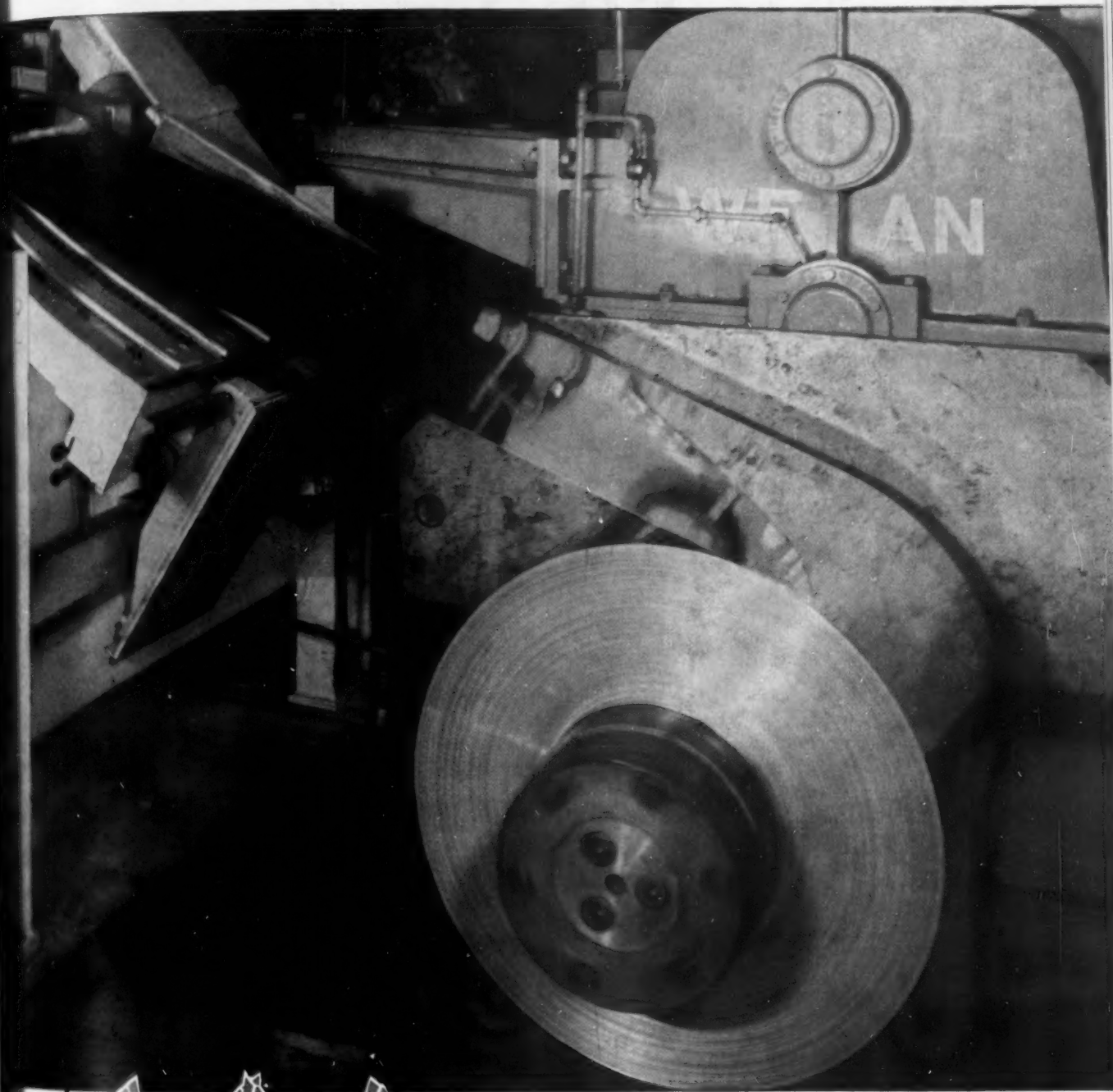
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UNIVERSITY OF MICHIGAN

AUG 13 1954

THE NATIONAL METALWORKING WEEKLY

EAST ENGINEERING LIBRARY 1954



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How Hot can a Jet Get?

Whooosshh! Jet engines generate a powerful amount of heat . . . heat which, uncontrolled in flight, would cause disastrous metallurgical distortions within the delicately balanced engine. So the problem is . . . or rather was . . . how to provide a dependably accurate means of measuring exhaust temperatures so that the pilot might have control over how hot his jets get.

And the answer? Special wiring harnesses running from engine to instrument panel . . . harnesses now made exclusively with Hoskins Chromel-Alumel thermocouple alloys.

Yes, wherever durability and accuracy are required in a thermocouple . . . whether for jet engines or industrial furnaces . . . you'll

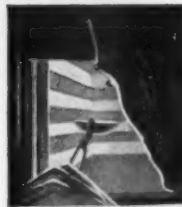
find Chromel-Alumel *right* for the job. Extremely durable . . . highly resistant to heat, corrosion, oxidation . . . guaranteed to register true temperature-E.M.F. values within specified close limits.

That's only part of Hoskins' product picture, though. Other specialized quality-controlled alloys developed and produced by Hoskins include: Alloy 785 for brazing belts; Alloy 717 for facing engine valves; special alloys for spark plug electrodes; Alloy 502 for heat resistant mechanical applications. And, of course, there's Hoskins CHROMEL . . . the original nickel-chromium resistance alloy used as heating elements and cold resistors in countless different products.



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There's an old saying here at Bethlehem that *good bars start with good scrap*. That's why we make sure that the scrap we use to make carbon bar steel is mighty good material.

And that's where this hard-to-please fellow comes in. He's a Bethlehem scrap inspector—one of the men who gives every incoming carload a thorough going-over; checking it against the shipping bill; ferreting out off-grade material.

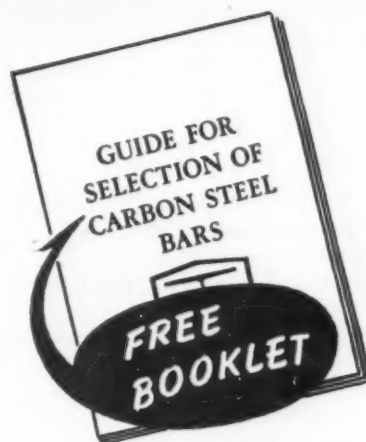
Like most of our scrap inspectors, he's been with Bethlehem for a good many years. Knows his job inside out. His practiced eye can classify an entire carload, perhaps in less time than it takes us to tell you about it. And at the same time, he's on the look-out for evidence of non-ferrous materials that can "poison" a heat of steel, and may seriously impair the

quality of the finished bars. The inspector has authority to sidetrack any car for more detailed testing and elimination of contaminated material.

Seems like a lot of fuss over a thing as simple-sounding as scrap, doesn't it? Well, when it comes to producing hot-rolled carbon bars we make a point of being finicky—in the scrapyards, around the open hearths, in the rolling mills. The result is, we think you'll agree that it's tough to beat Bethlehem Hot-Rolled Carbon Steel Bars for quality. Why not try some? Call any Bethlehem sales office, and tell us your requirements.

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WRITE:
Publications Dept., Div. I
Bethlehem Steel Company
Bethlehem, Pa.

BETHLEHEM HOT-ROLLED CARBON BARS

STANDARD SECTIONS • SPECIAL SECTIONS • BAR SIZE SHAPES



August 12, 1954

Starred items are digested at the right

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NEWS DEVELOPMENTS

LOWER RATES HAVEN'T HELPED RAILROADS — P. 67
Motor competitive rail rates have reversed the trend to trucks. But rails aren't gaining enough additional traffic to offset lower rates. Revenues are disappointing. Rail officials admit they pulled a boner. Some argue rate policies are not realistic, that bulk rates should be raised. May move to get truck carriers pegged at premium service rates. ICC decided one test case in very similar manner.

BIG VACUUM MELTING EXPANSION COMING — P. 71
Add vacuum melting to your list of "magic words" in metalworking—you'll be hearing it more often. Reason is growing demand for the high physical properties, especially at high temperatures, of vacuum-melted alloys. Major markets today are aircraft, electronics, automatic processing with top emphasis on jet engines. Older firms in field are growing, new ones joining in expansion that will push monthly capacity from 12-20 tons to 500.

QUEBEC-LABRADOR ORE ARRIVES IN U. S. — P. 77
Ceremony hails arrival of first boatload from Sept. 115. Unloaded at Pennsylvania Railroad's new 6600 ton-per-hour ore dock at Philadelphia. Iron Ore Co. plans to ship 1½ million tons this year.

MODEL CHANGEOVER SHUTDOWNS HIT DETROIT—P. 79
Dull market conditions for most automakers mean lengthy shutdowns for '55 model changeovers for first time in years. And Reuther will recall it next year when UAW demands a guaranteed annual wage. Best off, Ford and Chevy shutdowns will be shortest.

WHY YOU CAN EXPECT BUSINESS PICKUP — P. 83
You can look for a business pickup in the fall because: construction boom will continue, defense spending may actually be upped slightly over current rate. Also inventory cutbacks will end soon; steel will be perking up; consumer credit and disposable income are both rising. And lengthening of factory workweek usually precedes a business revival.

SLIGHT POLITICAL EDGE FOR REPUBLICANS — P. 91
Surveys show political tide favors Republicans, but no runaway is expected at polls this fall. Both sides expect to control House by 20 seats.

ENGINEERING & PRODUCTION

AUTOMATIC MOLDING MACHINE CUTS COSTS—P. 109

Manual handling of bulky flasks and finished molds is eliminated by a fully automatic molding machine recently installed at Buick. The new unit produces V-8 engine block molds which are remarkably accurate and uniform. It has a capacity of more than 200 half-molds per hour. Mold hardness is increased.

PORTABLE ELEMENTS HEAT MAGNESIUM DIES—P. 112

Hot forming magnesium calls for close heat control on dies and alloy material. Gas burners, torches, oil baths and resistance heating elements offer fabricators a choice. However, one company is switching to rod-type resistance heaters wherever possible. The rods are kept in a portable storage unit and can be wheeled around the plant on call.

PHOSPHORIZED COPPER ANODE FOR PLATING—P. 114

Commercial copper anodes, containing 0.02 to 0.03 pct phosphorous, possess superior plating characteristics. Deposits are exceptionally smooth and any desired thickness can be obtained. These anodes are particularly suited for electrotyping and electroforming.

NONDESTRUCTIVE TESTING CHECKS FORGING—P. 117

Quality control through nondestructive testing in a steel forging plant can be an important means of boosting profits through savings. The tests are fast, accurate, save good forgings and spot salvageable defects quickly. Even at high production rates, defective lots are kept small.

POWDER PROCESS REMOVES TOUGH METAL — P. 122

Introduction of iron powder into the reaction zone of an oxyacetylene flame speeds metal removal in many jobs difficult or impossible by other methods. Powder washing and powder lancing is described in this third and last part of the article.

NEXT WEEK:

DIMENSIONAL CONTROL CUTS FINISHING COSTS

Low finishing costs on heat treated precision steel parts are possible through close control of rough machined dimensions. Too much stock allowance means unnecessary metal removal. Too little allowance means reject parts. Combining maximum, minimum and mean values gives exact stock allowance for any size.

MARKETS & PRICES

RAILROAD METAL BUYING SLUMP LINGERS — P. 69

Railroad steel buying has been weak since the year began. It appears that it will continue to decline. Neither carbuilders nor roads offer much hope of increasing consumption. Changes look permanent. Total railroad purchasing in 1954 may be off more than 25 pct from last year.

ALUMINUM PRICES TRAIL COST INCREASES — P. 73

Aluminum industry is getting back to normal after the wage-price round. Producers are absorbing part of their higher costs which include a 12¢ an hr wage package and increases in costs of goods and services purchased. Price of Canadian metal also raised. Increases vary on mill products depending on market conditions as well as extent of cost hike.

STEEL SALESMEN FIND PROSPECTS BRIGHTER — P. 165

Steel market reports at grass roots levels tell of steel salesmen finding brighter prospects for business. But so far promises far outweigh orders, as the summer lull hangs on. Expected pickup in auto orders will be delayed because of extended downtime for model changes. Meanwhile, the market is supported by miscellaneous orders from a variety of diverse small manufacturing plants and parts makers.

SHEETS, BARS PRESAGE FALL STEEL UPTURN — P. 167

Automotive demand, spotty at present, indicates an October pickup. Other steel products used by automakers will follow. Shorter model changeover time for two makes will cut early fall sales lull.

SLAB ZINC STOCKS LOWEST THIS YEAR — P. 168

For the third month in a row, smelter stocks of zinc dipped again in July. Now 197,885 tons, they're the lowest they've been all year—thanks to increased government buying (13,214 tons in July). Domestic shipments lower in vacation month.

REFRACTORIES PRODUCERS LOOK FOR SALES UPTURN

Refractories makers think they have hit bottom and that third quarter business will be better. Inventories of steel companies are at rock bottom. Buying would probably increase without a steel upturn. Competition has been rugged, resulted in price trimming by smaller firms which big ones won't meet.

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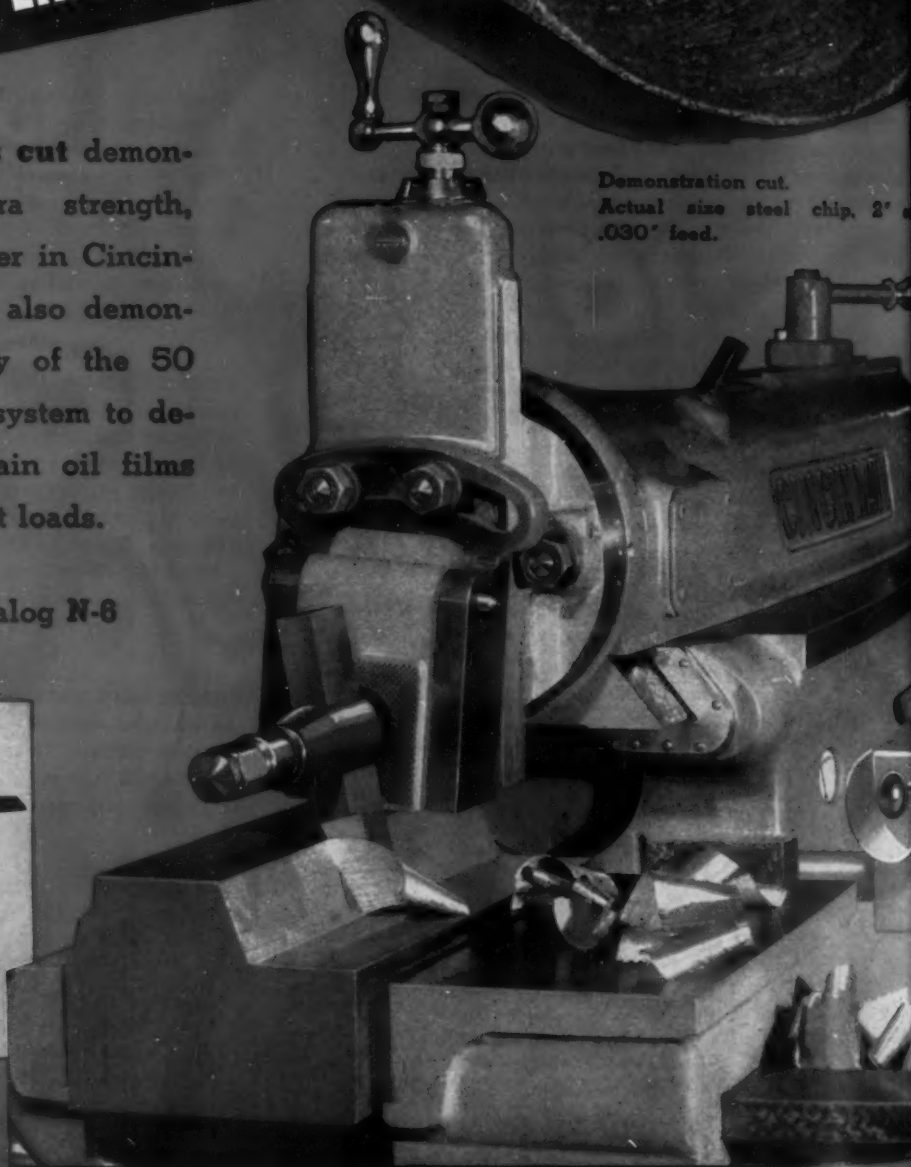
Write for Catalog N-6



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Actual size steel chip, 2" x
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Indexed in the Industrial Arts Index
and the Engineering Index.



Editorial:

Trading With The Enemy

ASIDE from Allied differences over Red China coming into the United Nations there is also the question of trading with the Communists. Much of the talk about more trade with China and Russia is the result of Red propaganda. By seeming to indicate that they want to trade with the West the Communists try to create the impression that we are trade "aggressors" because we won't fall for their line.

The belief by some that trading with the Reds will cause them to understand us or accept our ideologies and that such trade will lead us toward real peace is ridiculous. France and Britain traded extensively with Germany right up to the beginning of both world wars.

Lack of trade does not cause war either. The semiblockade of Red China has not lead to the third world war. It probably had something to do with the cease fire in Korea. Red China has a long way to go to become an industrial nation. Until that time comes she will try every which way to get machine tools, strategic materials, steel mill equipment and everything that is needed for a war machine.

While Russia has made noises to her people about consumer goods output it may turn out to be nothing but a noise. She could—if she wanted—buy some butter, wheat, autos and other civilian items. But there is no sign that the masters in the Kremlin want to sacrifice industrial strength to help the millions whom it enslaves.

The embargo on strategic materials to the Reds leaves a lot to be desired but it has hurt both China and Russia. Both want heavy durables and everything that will make their war machine stronger and will build up the means to topple noncommunist countries.

We couldn't, if we wanted to, stop all trade with the Reds. Non-communist nations in Europe and Asia have and will export important items to them. But we can and should do everything possible to see that neither Red China nor Russia get anything from us or our allies which will make either country stronger militarily.

It is the height of folly and stupidity for the United States to have anything to do with a West-East trade which will enable the East to become strong enough to eventually carry out the avowed communistic aim—world domination.

Tom Campbell

EDITOR

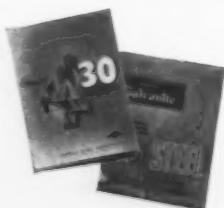
August 12, 1954

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dear editor:

New Wetting Agents

Sir:

If you keep on putting interesting articles in THE IRON AGE, I will keep writing for information. In the July 29 issue, Newsfront, p. 43, there is a paragraph concerning new wetting agents used in a recently developed water-soluble coolant concentrate.

We should be glad to know who makes them and what they are and any other information. W. W. McKaig, Cumberland Steel Co., Cumberland, Md.

Further information may be obtained from Johnson's Wax, 33-16 Woodside Ave., Woodside, N. Y.—Ed.

Creep Testing

Sir:

IRON AGE NEWSFRONT JULY 15 MENTIONS TESTING FOR CREEP HAS BEEN SIMPLIFIED. WE WOULD LIKE TO LEARN DETAILS. WHOM SHOULD WE CONTACT? K. V. King, Richmond Refinery, Standard Oil Co., San Francisco.

Contact Allis-Chalmers Mfg. Co., Box 512, Milwaukee.—Ed.

Fire Resistant Plastics

Sir:

Reference is made to p. 45 of your June 24 issue.

More specifically, reference is made to the next-to-last item appearing on that page which reads as follows:

"Fire resistant plastics, in the form of corrugated sheet reinforced with glass fiber, are finding many uses in the building trades. Fact that the material has recently been approved for exterior use on an office building and a school indicates growing acceptance."

Could you supply more information concerning this matter or refer me to the proper source or sources for additional details? L.

letters from readers

M. Dunn, Head, Architectural Section, Sales Development Div., Aluminum Co. of America, New Kensington, Pa.

Additional details may be obtained from Hooker Electrochemical Co., 1940 Ward St., Niagara Falls, N. Y.—Ed.

Die Inspector

Sir:

We should like to obtain, if available, five copies of the article, "New Instrument Simplifies Diamond Die Inspection," which appeared in the June 10 issue of THE IRON AGE. B. L. De Witt, Librarian, General Cable Corp., Bayonne, N. J.

More Power

Sir:

In behalf of our client, the Manhattan Rubber Div., Raybestos-Manhattan, Inc., we would like to request permission to reprint the article on Poly-V drive which ran on p. 169 of your June 17 issue.

Our client was very pleased by your interest in this new drive and would like to use reprints of the article for distribution to its sales staff. A. R. Poutray, Gale Benn Associates, New York.

Tantalum

Sir:

It would be most appreciated if you would send us a tear sheet of the following article in the July 15 issue: "Tantalum: Will Costs Stunt Growth?" by K. W. Bennett. N. W. Bass, Vice-President, The Brush Beryllium Co., Cleveland.

South American Steel

Sir:

Kindly send me two reprints of the article on p. 71 of the July 22 issue: "Steel: South America Aims Higher," H. Drever, President, Drever Co., Philadelphia.

"I Say Sheet Coil"



THIS IS COLD ROLLED SHEET COIL

Produced by High Speed Rolling in Continuous Wide Multiple Stand Mills and Still in Width



"I Say Thinsteel"



Which kind of Cold Rolled Strip Steel is best for You ?

CONSIDER SHEET COIL

- if variations in physical characteristics are permissible.
- if fairly heavy oversize gauge variations are not objectionable.
- if the fabricating operations are not too complicated and do not require intricate expensive dies.
- if a fine surface finish is not essential.
- if a good base for paint or enamel is desired.
- if you do not object to some "square footage" loss due to oversize variation.
- then Sheet Coil will probably be the most economical material for the job.

CONSIDER THINSTEEL

- if you must have a high degree of uniformity of chemistry and physical properties—and precision gauge tolerances.
- if you wish to keep die wear low, no oversize gauge variations.
- if you require a fine finish or a better base for plating.
- if you want maximum yield for "most finished parts per ton."
- if you want selected tempers for maximum strength and lightest weight.
- then you'll find Thinsteel the most economical material by far.

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August 12, 1954

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LATEST move in the transportation of liquid chemicals is the recent launching of the S.S. Marine Dow-Chem. This is the first large-capacity, seagoing chemical tanker to be built in the United States. And the G.T.M.—Goodyear Technical Man—played an important part in its design and construction.

Nestled in the ship's forward hold are six huge, bottle-shaped tanks specifically built for the interchangeable transport of hydrochlo-

ric acid and concentrated caustic solution. To handle such corrosive chemicals on an alternating basis, these 40,000-gallon tanks are lined with a custom-made PLIOWELD compound, specified by the G.T.M., but only after six years of laboratory and field tests.

PLIOWELD is a dense, resilient rubber sheet. It can and does resist a wide range of acids, alkalies, salts, alcohols, fumes, gases and water. It

also resists abrasion. It always is compounded to withstand the particular corrosives or abrasives to be handled. And it always is permanently bonded to the metal by an exclusive Goodyear process.

If your equipment is threatened by corrosion or abrasion, call on the G.T.M. for protection with PLIOWELD. You can contact him by writing Goodyear, Industrial Products Division, Akron 16, Ohio.

GOOD YEAR

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Plioweld—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

fatigue cracks

Progress

One glorious thing about the new format. We don't have to write so much! Note the bigger type and all that white space up above. From now on we figure just one joke and a long puzzler and we can get home earlier. Now if they'd just cut it down to one column . . .

Salute To Iron Age

This isn't the joke. This is some serious stuff about THE IRON AGE which again confirms our studied opinion that it is something really special. To show you that we aren't left in left field read what Dudley Harmon, who writes a column for some 15 New England newspapers, says about our recent special feature, "Salute To New England."

"The 'Salute To New England,' published recently by THE IRON AGE, proved to be bigger and better than had been anticipated. In fact, its 82 pages constitute perhaps the most effective presentation of industrial New England in the history of the region . . ."

(N E was started in 1620. My note)

"It is so informative and constructive that it seems a pity it will probably be seen and read by relatively few New Englanders outside the magazine's regular subscription list and management in our metalworking industries . . ."

"THE IRON AGE, now in its 100th year of publication, is often termed the 'bible of the metalworking industries.' It is natural, therefore, that it has beamed its 'Salute To New England' to those industries in this region . . ."

Mr. Harmon then describes the editorial content, but you've already read that, of course.

Keep sending the money.

by William M. Coffey

Puzzlers

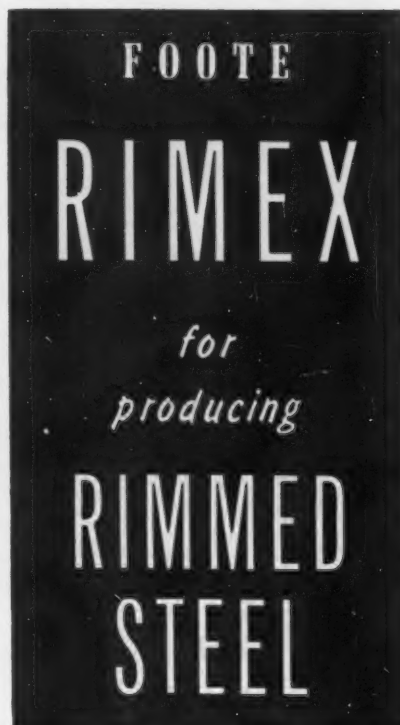
Because of the bigger type format mentioned earlier, the winners of the king, daughter and page puzzler were cut out of the column last week by the printers in Phila. So here they are again: The best we received (all illustrated) was from Miss Lizzie Harter, the rest were from Bill Loubier, John B. McCarry, James W. Mull, Jr., R. W. Hautzenroeder, Carl G. Browne, G. C. Lyon, T. J. La Lime, Karl H. Geis and H. H. Robbins.

. . . And the answer to Nora LaDow's puzzler (the dogs running after the rabbit) according to Nora is 24.270509831 mph for the northeast corner dog and 21.213203436 mph for the northwest corner dog. We would prefer in the interests of accuracy to drag these out a little more, but we'll accept them as round figures. Winners: P. A. Smith, Morris Ertman (50 pct correct), Wayne McIntire, Warren Perin, Victor Oburg, Marshall Thomas and N. P. Stauffer, Jr., and others too numerous to mention.

New Puzzler

Seven boys owned a certain number of marbles collectively, but there was a considerable difference of opinion as to how many belonged to each. The father of one of the boys, an IRON AGE reader, knew how to solve all puzzles. He decided to settle the problem to everyone's satisfaction. He asked each of the boys to get a basket. Then he distributed the marbles in a peculiar way which looked far from just. Finally he asked the first boy to dip into his basket and put into each of the others as many as were already in it. He told the others to do the same thing. When they now looked each discovered he had 128 marbles. How many marbles did father put into each boy's basket? Thanks to Ken Hofer for this one.

a
significant
advance



This industry-proved steel additive reduces the cost of producing rimmed steel, with these advantages:

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- 3. BECAUSE** accurate shapes can be formed in hard-to-work alloys at a fraction of the cost and time involved in machining castings or forgings.
- 4. BECAUSE** such parts are being made for Jet Engines, Guided Missiles, Truck, Trailer and Airplane sections, lighter and stronger and without the need for subsequent high cost and unsatisfactory hand working.
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A new brazing technique for stainless parts has shown good results according to reports based on radiographic examination of the joints. An excellent bond is achieved in brazing a stainless retaining ring with a silver solder to a stainless cylinder by rotating the cylinder with the ring stationary while the brazing material is fluid.

Three-dimensional pictures of bloom defects are being used for training steelmill inspectors. Defects are first photographed with a wire grid over the bloom. Then, defects such as scabs, cracks and seams are marked and rephotographed through the grid which is made up of 4-in. squares. In training sessions, a 3-D projector is used to show defective blooms.

Complete invoicing data for a single consumer is being stored on 1½ in. of 35 mm magnetic tape in a recent British development. Information on several thousand customers can be stored on a 1000-ft reel of tape.

A density gage, new member in the growing family of gamma gage instruments, is being extensively tested in several industries. The gage, using a Cobalt 60 source, has given continuous measurements of density variations of less than 0.1 pct on some materials. Materials tested: Mine and mill concentrates, chemicals, oils, batches of rubber, powdered materials.

Commercial production of vacuum melted steels is headed for mushroom growth. In addition to the joint venture of Crucible Steel Co. and National Research Corp., and the just announced commercial operation of Utica Drop Forge &

Titanium scale problems have been simplified at one aircraft plant with a specially developed process. Metal surface is coated before heat treatment. Coating acts chemically to change scale to a more easily removed form and also inhibits scale formation.

After styling, ride characteristics are receiving most attention from automakers. New suspensions will be introduced on several 1955 cars. Developments, concentrated in less expensive cars, aim for that "big car feel."

Induction hardening of large gears holds several advantages over conventional methods, one gear-maker reports. High tooth hardness, selective area treatment, reduced distortion, and short time for treatment are advantages claimed for the method.

Steel merger rumors have extended to Detroit where one fast growing mill has been linked with other proposed combinations. Its new capacity and proximity to the auto industry are strong selling points.

Focal point of the automotive horsepower race is now the low price field. Ford, Chevrolet and Plymouth are expected to boost their 1955 ratings well into the area now occupied by the medium priced cars. Ford, with a later introduction date, may gain a slight advantage.

AXELSON heavy duty LATHES

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AXELSON HEAVY DUTY LATHES

Model B-16"	— Swing over Ways . . .	18½"
Model W-20"	— Swing over Ways . . .	22½"
Model D-20"	— Swing over Ways . . .	22½"
Model E-25"	— Swing over Ways . . .	28½"
Model F-32"	— Swing over Ways . . .	34½"

AXELSON PRECISION TOOL ROOM LATHES

Model 16	— Swing over Ways	18½"
Model 20	— Swing over Ways	22½"

AXELSON HOLLOW SPINDLE LATHES

Model 20"	— Swing over Ways 22½", Hole 8⅞"
Model 25"	— Swing over Ways 28¾", Hole 11"
Model 32"	— Swing over Ways 34½", Hole 11"
Model 32"	— Also available with gap bed, and extra length beds.

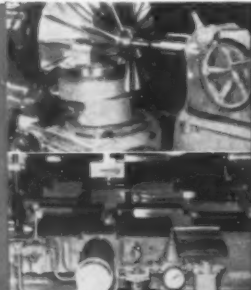
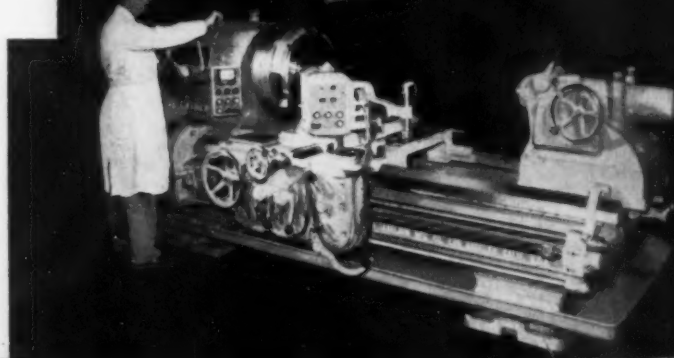
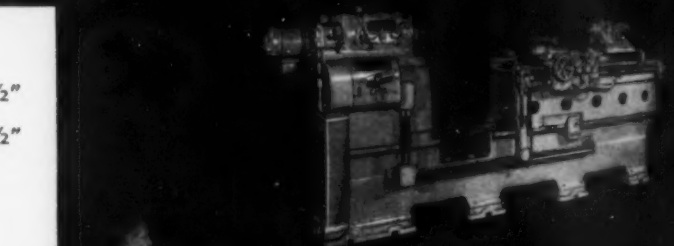
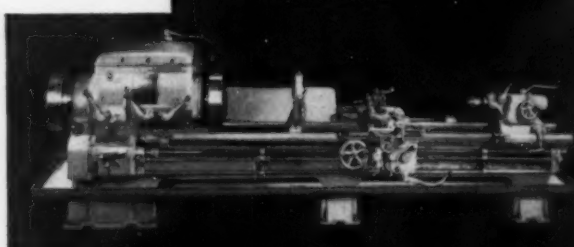
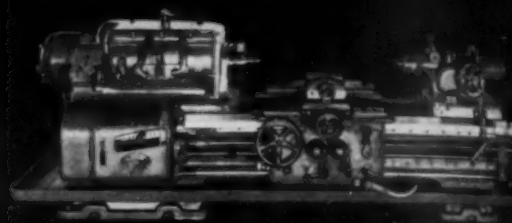
AXELSON GAP BED LATHES

Model 32 x 100	— Swing over Ways . . .	34½"
	— Swing over Gap . . .	100"
Model 32 x 125	— Swing over Ways . . .	34½"
	— Swing over Gap . . .	125"

Also available with Hollow Spindle, 11" Hole and extra length beds.

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3. Entirely special turning machines built for specific work. Axelson special machines may include such special features as hydraulic or electronic tracer equipment; automatic cycling carriages which provide rapid traverse to the cut, feed, and rapid return; automatic work loading; and special chucking fixtures and tooling. Axelson will engineer those features that will allow the transfer of the skill of the operator into the machine to provide lower unit production costs. A study of your work may suggest the employment of such designs that will lower costs, eliminate subsequent operations on other machines and increase production. Your request for assistance, without obligation, is welcome.



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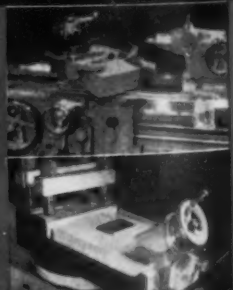
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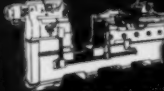
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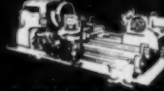
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GAP BED



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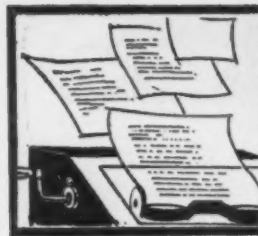


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NEWS SECTION

Special Report

Lower Rates Haven't Helped Rails

**Motor competitive rates have reversed trend to trucks . . .
But railroad revenues are disappointing . . . Rail officials privately admit they
made mistake in cutting rates...Weigh new moves—By J. B. Delaney.**

♦ RAILROADS still lack the formula for recovering iron and steel freight traffic from the trucking industry in sufficient volume to offset rate reductions designed to lure shippers back to the rails.

The motor competitive rail rates that went into effect last March in Eastern Territory have returned some business to the rails, but the net gain has been extremely disappointing—nowhere near enough to compensate for the dollar loss resulting from the reduced rates.

While the experience of the various roads varies, railroad officials will tell you privately that they goofed on this one. Their one consolation is that the rate cuts have succeeded in reversing the trend toward increased use of trucks, even though the flow of dollars into the till has decreased.

Small Stocks Help Trucks

A top official of one large railroad told THE IRON AGE that as far as his company is concerned the shift from truck to rail has been infinitesimal, hardly enough to measure. He qualified his remarks with the observation that reduced steel production and shipments since the lower rates went into effect may have a bearing on results to date.

Another factor that may be working against the railroads in the present steel market is the low-inventory policy of many steel users. The speed and convenience of truck transport make it easy for consumers to work from a modest stockpile and thus hold their costs to a minimum.

Some rail officials believe it was a mistake to apply the rate cuts

uniformly to the list of manufactured iron and steel articles. They feel that more drastic cuts should have been made on products more susceptible to shipment by truck—sheets and strip in particular. If necessary, they argue, the sheet and strip rates should be cut even below the pig iron rates.

Beat Extra Charges

Reason for the emphasis on sheets and strip is that these products account for 35 pct of total manufactured iron and steel shipments, according to arguments made by the railroads before the Interstate Commerce Commission last March in support of the existing motor competitive rates. In 1953, according to this presentation, 73 pct of total monthly sheet and strip tonnage within official

territory was moved by truck, 23 pct by rail, and 4 pct by water.

While the March reductions brought rail rates down below comparable truck rates on sheets and strip, this is offset by shrouding and wrapping charges made by the steel producers when these products are shipped by rail. This extra protection is demanded—and paid for—by the consumer. But when the same material is shipped by truck, a protective tarpaulin is provided by the carrier at no extra charge. Thus the reduced rail rate is nullified, and the other advantages of truck shipment are so much gravy to the steel consumer.

Peg Trucks' Premium?

Some rail officials say frankly that the rate policies of the railroads are not realistic. They argue

Who Carried the Steel in '53

(Estimated Monthly Tonnages)

	Grand Total	Pct of Total		Grand Total	Pct of Total
SHEET & STRIP			Water	534	1
Rail	143,230	23	WIRE & WIRE PRODUCTS		
Truck	464,009	73	Rail	17,488	63
Water	27,076	4	Truck	9,918	36
TIN, TERNE & BLACKPLATE			Water	200	1
Rail	66,080	59	STRUCTURAL SHAPES & PILINGS		
Truck	44,572	39	Rail	76,603	84
Water	2,773	2	Truck	13,995	15
PLATES			Water	1,272	1
Rail	70,960	72	OTHERS		
Truck	24,185	25	Rail	27,490	60
Water	2,564	3	Truck	17,782	39
BARS			Water	100	1
Rail	87,929	58	COMPOSITE		
Truck	58,091	39	Rail	527,628	44
Water	4,555	3	Truck	646,759	53
PIPE, TUBES & FITTINGS			Water	39,074	3
Rail	35,848	71			
Truck	14,207	28			

Why Railroad Steel Buying Is Down

In first half of 1954:

- ▶ Freight car deliveries were off 37 pct from last year.
- ▶ Freight car orders have dropped 66 pct from first half '53.
- ▶ Rail steel shipments for first 5 months are down 9 pct, will dip sharply.

that the low rate structure built up over the years on bulk shipments such as ore, coal, and limestone and on which truck competition is practically non-existent should be revised upward to offset reductions on finished steel necessary to bring back tonnage lost to truckers.

The ultimate solution may lie in recognition by the ICC that trucks provide a premium service and truck rates should be pegged at a level higher than that charged by the rails. There is some sentiment for such a move even among the trucking industry itself. Cut-throat competition among truckers makes it extremely difficult to earn a fair margin of profit.

ICC is now making a study of rail and truck rates on iron and steel. This study is expected to be completed some time this fall and a ruling may be made early in 1955. Some responsible observers say they would not be surprised if ICC decides that trucks constitute a premium service.

ICC Stops Cuts

A recent decision in a case involving shipment of tobacco products from Virginia and North Carolina to Official Territory may provide a clue to ICC thinking with respect to rail versus truck rates. ICC suspended reduced rates installed by both truckers and railroads on tobacco shipments and at the same time told the truckers to increase rates "in those instances where they are lower than the present rail base rates" for the 36,000 lb minimum. The rails were permitted to continue rates 20 pct lower for weight in excess of 40,000 lb.

In effect, ICC said that truck

service is premium and should be charged for accordingly. It justified this protective umbrella for the rails by pointing out that "along with the other facts of record . . .

the estimated truckload transportation in 1953 is more than four times the carload rail transportation from North Carolina origins . . ."

ICC OK's Piggyback

Railroad companies, armed with a new federal decision in favor of piggyback service, are making plans this week to expand their trailer-on-flatcar service.

General approval of trailer transportation by rail was provided late last week by Interstate Commerce Commission. The agency will continue its investigation of the justification for tariff rates filed earlier this year by six railroads setting up piggyback service.

STEEL: What Mills Shipped in June

As Reported to the American Iron and Steel Institute

STEEL PRODUCTS	JUNE					YEAR TO DATE				
	Carbon	Alloy	Stainless	Total	Pct of Total Shipments	Carbon	Alloy	Stainless	Total	Pct of Total Shipments
Ingot	15,096	9,946	1,768	26,810	0.4	101,580	70,713	9,460	181,753	0.5
Blooms, slabs, billets, tube rounds, sheet bars, etc.	96,345	30,478	1,113	129,936	2.2	585,872	166,833	6,427	759,132	2.1
Skelp	9,165			9,165	0.2	58,840			58,840	0.2
Wire rods	81,231	1,263	479	82,973	1.4	375,630	7,179	2,282	385,091	1.2
TOTAL SEMI-FINISHED	203,837	41,687	3,360	248,884	4.2	1,121,922	244,725	18,169	1,384,816	4.2
Structural shapes (heavy)	370,790	1,761	1	372,572	6.3	2,442,885	14,038	57	2,456,980	7.4
Steel piling	35,085			35,085	0.6	198,845			198,845	0.6
Plates	400,051	19,144	1,556	420,751	7.2	2,830,890	117,471	8,519	2,956,880	8.8
Rails—standard	103,011			103,011	1.8	767,739		112	767,851	2.4
Rails—all other	4,998			4,998	0.1	46,964			46,964	0.2
Joint bars	6,520			6,520	0.1	47,727			47,727	0.1
Tie plates	23,477			23,477	0.4	164,237			164,237	0.5
Track spikes	7,256			7,256	0.1	44,754			44,754	0.1
Wheels	13,133	138		13,271	0.2	109,329	698		110,027	0.3
Axles	3,913	21		3,934	0.1	32,453	113		32,566	0.1
TOTAL RAILS AND ACCESSORIES	162,306	159		162,467	2.8	1,233,203	923		1,234,126	3.7
Bars—hot rolled	409,263	119,801	2,934	531,998	9.0	2,447,654	703,359	17,877	3,168,890	9.5
Bars—reinforcing	210,522			210,522	3.6	867,373			867,373	2.6
Bars—cold finished	87,551	16,436	3,231	107,218	1.8	507,865	89,173	18,947	615,985	1.9
Tool steel	983	6,331		7,314	0.1	6,903	38,010		44,913	0.1
TOTAL BARS AND TOOL STEEL	708,319	142,568	6,165	857,052	14.5	3,829,797	830,542	36,824	4,697,163	14.1
Standard pipe	212,435	8		212,443	3.6	1,120,174	153	5	1,120,332	3.4
Oil country goods	188,245	26,622		214,867	3.6	1,180,138	150,049		1,330,187	3.7
Line pipe	275,243	10		275,253	4.7	1,499,785	16		1,499,801	4.8
Mechanical tubing	43,074	16,796	290	60,160	1.0	266,906	90,151	2,083	359,140	1.1
Pressure tubing	18,091	3,663	1,312	23,066	0.4	115,196	24,370	9,210	148,776	0.4
TOTAL PIPE AND TUBING	737,088	47,089	1,602	785,779	13.3	4,062,199	265,039	11,298	4,338,536	13.1
Wire—drawn	229,650	2,833	1,547	234,030	4.0	1,166,238	15,796	9,058	1,191,093	3.5
Wire—nails, staples	54,656			54,656	0.9	287,678		2	287,680	0.9
Wire—barbed, twisted	13,498			13,498	0.2	87,832			87,832	0.3
Wire—woven wire fence	29,063			29,063	0.5	190,327			190,327	0.6
Wire—bale ties	8,780			8,780	0.2	29,971			29,971	0.1
TOTAL WIRE & WIRE PRODUCTS	335,624	2,833	1,547	340,004	5.8	1,782,246	15,796	9,057	1,787,099	5.4
Blackplate	70,919			70,919	1.2	361,114			361,114	1.1
Tin & terneplate—hot dipped	187,508			187,508	3.2	746,834			746,834	2.3
Tinplate—electrolytic	502,466			502,466	8.6	2,273,319			2,273,319	6.8
TOTAL TIN MILL PRODUCTS	760,893			760,893	12.9	3,381,267			3,381,267	10.1
Sheets—hot rolled	519,149	13,697	864	533,710	9.1	2,922,435	95,992	6,350	3,024,777	9.1
Sheets—cold rolled	835,179	3,187	8,712	847,078	14.4	4,731,416	23,705	45,094	4,800,215	14.4
Sheets—galvanized	200,456			200,456	3.4	1,120,806	350		1,121,156	3.4
Sheets—all other coated	15,130			15,130	0.3	86,537			86,537	0.3
Sheets—enameling	12,916			12,916	0.2	86,697			86,697	0.3
Electrical sheets & strip	8,641	39,420		48,061	0.8	49,687	282,467		312,154	0.9
Strip—hot rolled	137,142	2,637	364	140,143	2.4	726,731	11,840	1,454	739,825	2.2
Strip—cold rolled	92,421	1,126	12,960	106,507	1.8	557,959	6,548	82,750	647,257	1.9
TOTAL SHEETS AND STRIP	1,821,034	60,067	22,900	1,904,001	32.4	10,282,468	400,702	135,648	10,818,818	32.5
TOTAL SHIPMENTS (1954)	5,535,029	315,328	37,131	5,887,488	100.0	31,165,722	1,889,236	219,572	33,274,530	100.0
TOTAL—PRIOR YEAR (1953)	6,342,851	553,137	54,071	6,950,059		38,717,745	3,302,802	336,314	42,356,861	

♦ RAILROAD steel buying has been weak since the year began. At midyear it appears that it will continue to decline. Neither car-builders nor the roads themselves offer much hope of increased consumption. The steel grades most directly affected: shapes, rail, plate, rounds, billets and forgings.

Demand for steel rail, after a warning dip in April, began to slide sharply in May. Railroad buying for second half suggests a continuing slide through the remainder of the year in rail and steel products. The current outlook suggests that forecasts of a 20-25 pct drop in rail buying in 1954 were actually optimistic.

Car Orders Tailspin

In June of this year Ben Fairless told the Committee on Railroad Suppliers in New York that the railroads, which normally consume 7 pct of the nation's steel output and used 5.5 million tons during 1953, would take only about 4 millions tons in 1954. And earlier in the year the Department of Commerce estimated there would be about a 33 pct drop in railway expenditures for new plant and equipment.

Freight car builders report that new car orders continue to sink, despite the fact that railroad retirement of overage cars continues at its previous rate of 5000 to 6000 cars per month. Though there's been hope that the rate of car retirement would force new car ordering, the hope is regarded as an increasingly thin one. Nor are Washington rumbles that more defense transport is needed taken very seriously.

Railroads indicate they still have a fair surplus of cars over and above those needed to meet current reduced freight requirements.

At the beginning of July the freight car surplus was announced as 73,000 cars. It will take considerably more carloadings, and considerably more old car retirement to wipe out the difference.

Drop in business at the freight car loading level and in car building shops is showing up directly in reduced railroad steel buying. One road considering 16,000 tons

of rail for tracklaying in 1954 reduced the tonnage to 10,000 tons before the orders were put on paper. By March hold orders had been placed on another 4000 tons. Current thinking is that the hold order will not be lifted during the remainder of 1954.

A mill that beat 1953's record rail shipments through June this year indicates August is the end of its rail shipping for the year. There just aren't any more orders.

A road that consumed 28,000 tons of steel other than rail in 1953, and ordered 1508 tons of steel other than rail in June of 1953, ordered exactly 77 tons in June this year. This despite the fact that it was ordering an average of only 2000 tons per month in the first quarter 1954.

Though one road will rebuild 30 pct more cars in its own shops in 1954 than it did in 1953, it will order less steel. The steel is already, with minor exceptions, in inventory.

Steel buying by commercial builders has directly reflected the



"He's a sort of poor man's poor man."

SPECIAL REPORT

STEEL: Rail Softness Lingers

No pickup in railroad steel buying seen . . . Drop in car loading, freight car building are big factors . . . Buying may be off over 25 pct from '53—By K. W. Bennett.

decline in new car ordering that really began as far back as 1951. Despite new equipment such as the PS-2 standard covered hopper car of Pullman Standard and a new General American Transportation Corp. model, both of which have caused some new ordering, there's no indication that order backlogs will pickup during the remainder of 1954. And a substantial portion of new car construction in late third quarter of this year will utilize steel and components already in stock.

Said the purchasing vice-president of another carbuilding concern, "I used less steel in second half 1953 than I used in first half. I used less steel in first half 1954 than in second half 1953. And in second half 1954 I'll have some new orders but I'll be buying less new steel than in first half 1954."

Diversification Pays Off

Readjustment in steel buying patterns will be more than temporary from the carbuilder standpoint. Pressed Steel Car ordered its last shipment of steel consigned for freight car manufacture in November of last year. The company will build no more cars, will concentrate on oil well equipment, prefab houses.

General American Transportation Corp., already deep in storage tanks, is making a strong move into plastics. Pullman Standard has indicated that 60 pct of its revenues come from sources other than railroad car manufacture, including truck body manufacture, oil and chemical plant fabrication.

Net result of these diversification programs is that some of the carbuilders' net earnings are very good, returns per share having been doubled in some cases.

Stamping:

Modern transfer feed press is Bliss' thousandth.

The thousandth transfer feed press built by E. W. Bliss Co. was recently installed in a Ford Motor Co. plant. While the principle of transfer feed is over 60 years old, the press incorporates the most modern refinements.

These include a special stacking and feeding device, an improved slide bar and finger transfer mechanism and electric controls to prevent malfunctioning and damage to press or dies.

One Man Job

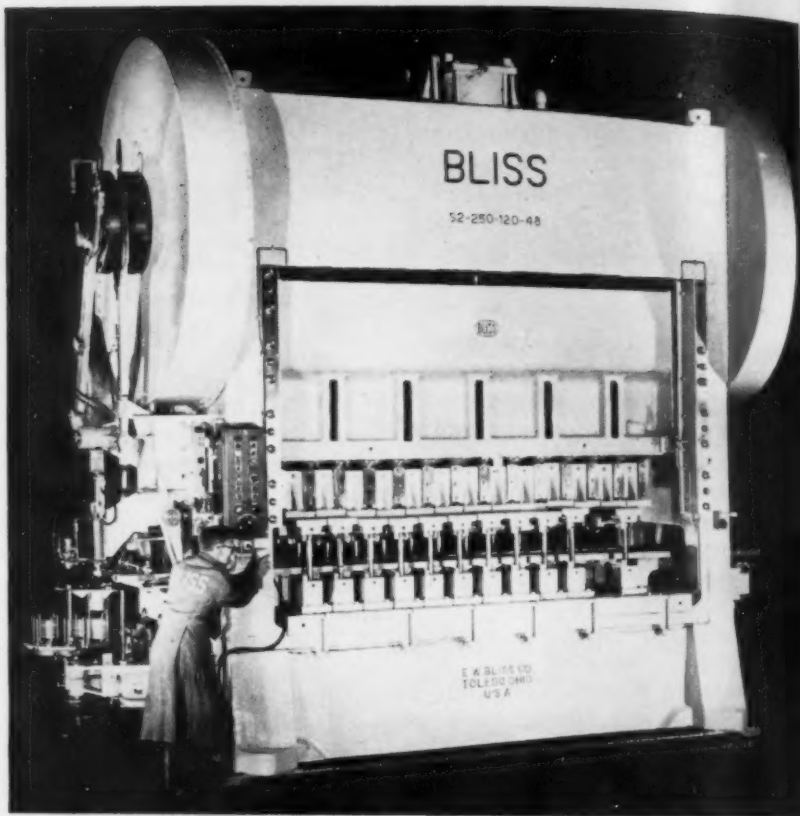
One of these safeties prevents double blanks from going through and doing possible damage. Blanks move under a feeler and if they're double thickness the feeler trips a micro-switch. This opens a trapdoor through which both blanks fall without stopping the press.

In this way only a single part is lost instead of 28 for every minute the press is inoperative.

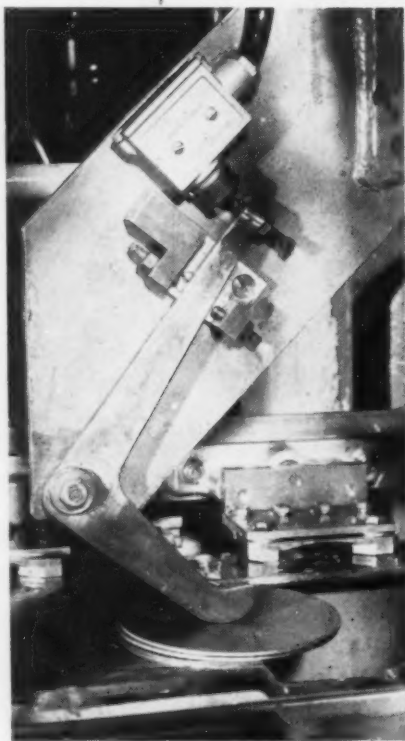
Press weighs 250 tons, has 13 stations (Ford is using only 11) and is powered by a 50-hp adjustable motor. Production rate can be varied from 14 to 28 stampings per minute and only one man is required to feed blanks and check press operation.

Ford Cuts Cost

Ford is making starter parts from 5-in. diameter 0.090-in. low carbon openhearth steel on this press. Production rate has increased and cost decreased since the auto firm switched from the earlier diecasting formerly used in these starter parts.

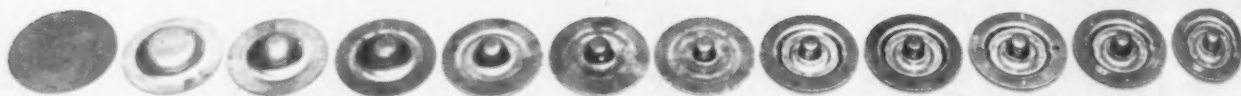


TESTING 1000th transfer feed press built by Bliss. Power is 50 hp.



AUTOMATIC feed mechanism maintains high output, protects press and dies.

FEELER and micro-switch prevent double blank from reaching dies by opening trapdoor. Press continues, missing production of only one part.



STAMPING SEQUENCE of 11 stations takes 5-in. blank through six draws, other operations within ± 0.005 -in.

♦ ADD VACUUM MELTING to your list of "magic words" in metalworking. From now on you'll be hearing a great deal more about it than you have in the past.

That's because commercial production of vacuum-melted steels and alloys is undergoing a startling expansion.

A well informed source told THE IRON AGE he estimates present production of 12 to 20 tons per month will be boosted to 500 tons or more per month within the next year.

Utica Drop Forge & Tool Corp., Utica, N. Y., is completing an expansion that virtually doubles U. S. vacuum-melting steel capacity.

Others Plan Entry

Vacuum Metals Corp., well known commercial producer, is engaged in an expansion program which will multiply its capacity several times within the next year. Vacuum Metals is jointly owned by Crucible Steel Corp. and National Research Corp.

Four additional firms will begin commercial production on a relatively large scale as soon as necessary equipment can be built and delivered.

Still other very large firms are pursuing independent development of vacuum melting, although they will undoubtedly consume all the steels they produce.

At least one other well known specialty producer is investing an estimated million dollars in the vacuum-melting process.

Why It's Good

This is quite an expansion package for a process that has heretofore been used to produce only very limited quantities of vacuum-melted steels for high temperature applications.

Why the sudden interest, and why the rapid growth? Here are some of the reasons:

1 Vacuum melting produces metals of very high purity. Inclusions or contaminants are too small to measure by ordinary methods.

2 High purity results in some excellent physical properties. Vacuum-melted steels have much better fatigue and impact stress resistance than conventional steels produced under atmospheric conditions.

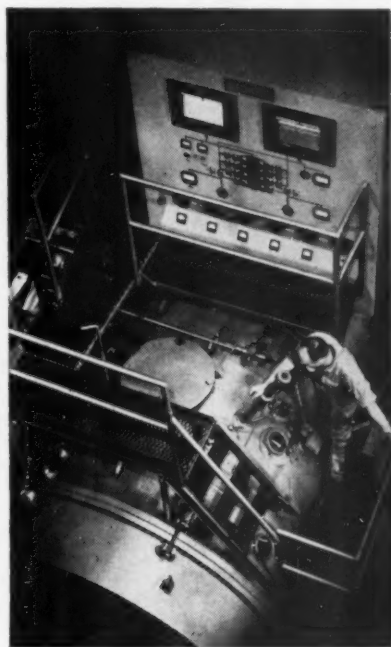
3 Excellent physical properties of

vacuum-melted alloy steels are even more apparent at relatively high temperatures. They are able to withstand extreme stresses at temperatures in the range of 1500-1600°F.

4 Because of these excellent properties, the vacuum-melted steels are finding a ready market in aircraft, electronic, and automatic process fields.

[Much broader use is indicated for the future. But the most important immediate use is in jet aircraft engines where high operating temperatures cause metals to lose much of their strength.]

5 By melting and casting the high temperature alloys under high vacuum, critically scarce and expensive alloying elements such as titanium and molybdenum (which oxidize and are lost during at-



NEW 1000-lb vacuum melting furnace will make jet turbine steels at Utica Drop Forge & Tool Corp.

EXPANSION

VACUUM MELTING: Grows Up

Demand for high quality of vacuum-melted metals spurring 25-fold expansion . . . Older firms expanding, new ones entering field . . . Why it's better—By W. V. Packard.

mospheric processing) are conserved; their hardening qualities are fully effective in smaller quantities than normally needed. Moreover, the alloy is improved by elimination of dissolved gases and inclusions which are expelled when the metal is melted under high vacuum.

Order More Furnaces

Mushrooming growth of vacuum melting is indicated by the expansion program of Utica Drop Forge

For more information on vacuum melting see THE IRON AGE, Apr. 2, 1953, p. 154, and Mar. 11, 1954, p. 79.—Ed.

& Tool Corp. A 1000-lb capacity vacuum furnace, designed and built by F. J. Stokes Machine Co., Philadelphia, has just gone into production at Utica. A second, similar furnace is scheduled to go into production within the next few weeks.

These are the largest vacuum furnaces ever constructed for melting and centrifugally casting high temperature alloys.

Together they are capable of turning out about 15,000 to 16,000 lb of high temperature alloys per day.

In addition, THE IRON AGE learned that another firm has two Stokes furnaces on order and two other firms have ordered one furnace each. This will assure alternate sources of supply, an important consideration for consumers.

General Electric Co., Westinghouse Electric Corp., and other large producers of jet engines have been following independent development work of their own. However, these companies are more interested in developing high temperature metals for their own use than they are in becoming com-



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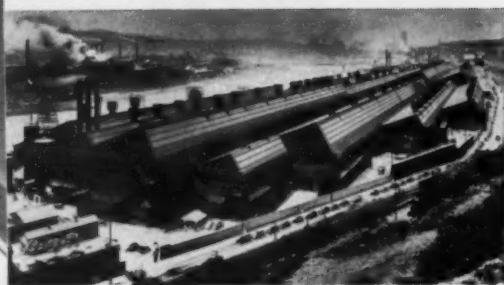
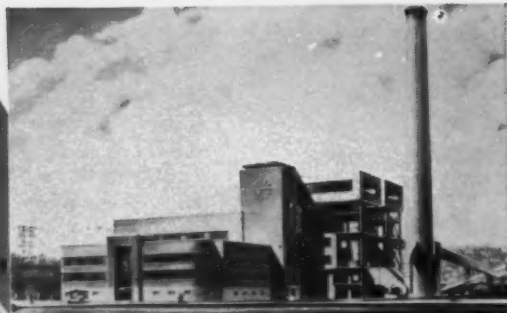
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EXPANSION

mercial, large volume producers. Vacuum Metals Corp., which started commercial production of high temperature steels last January after 7 years of research and development, is building a large vacuum furnace of its own design which will multiply the firm's capacity. The company also produces high purity copper and beryllium copper.

Vacuum furnaces cost in the neighborhood of \$250,000 each.

Improve Jet Performance

Utica is not a newcomer to the vacuum melting field. The firm has been producing high temperature alloys and supplying limited quantities to its customers for the past few years. Prior to its current expansion, production had been chiefly from a 400-lb capacity furnace.

Utica will use its new furnaces to make high-purity heat resistant alloys such as Pratt & Whitney Aircraft's just announced "Wasp-alloy."

Tests by Utica and Pratt & Whitney metallurgists have shown that vacuum melting increases stress-rupture life of turbine blades $2\frac{1}{2}$ times over conventional arc-melted blade material.

Improved properties of these high-purity alloys will allow jet engines to operate at higher temperatures for longer periods of time. This enables engines to deliver more thrust and boosts plane performance. It increases service life of critical turbine parts, lengthens the interval between engine overhauls, and reduces costs for replacements.

Build Stainless Mill

Armco Steel Corp. will begin immediately on a \$5.5 million project to install new rolling facilities at its Baltimore Works, W. W. Sebald, Armco president, reported last week.

"The project will consist of a bar mill especially designed to roll stainless steel in a wide variety of sizes and grades. Mill will be housed in a new 550-ft building, and it is estimated the project will be completed in about 18 months," Mr. Sebald said.

♦ **ALUMINUM** industry is getting back to normal—cleaning up the details of a price increase—now that two of the Big Three have signed new labor contracts and all of them plus Aluminium Ltd. Sales Co. have boosted prices accordingly.

After a bit more difficulty than was generally anticipated, the settlement pretty well followed the pattern established in the steel industry. As predicted by THE IRON AGE, workers got a 5¢ wage raise plus fringe benefits bringing the total increase in labor costs to about 12¢ per hour.

Price hikes announced by Aluminium Co. of America on Aug. 5 amount to 0.5¢ per lb for pig, 0.7¢ per lb for ingot. Kaiser Aluminium & Chemical Corp., Reynolds Metals Co., and Aluminium Ltd. Sales (U. S. distributor of Canadian aluminum) met the higher prices effective Aug. 6.

Overcome Late Snags

Alcoa was first to sign with the United Steelworkers—just before the contract deadline. The union won the 5¢ straight wage boost, 2¢ more social insurance and additional pension benefits without difficulty. But USW wanted 3¢ more in wages because of an escalation clause in plants where another union is bargaining agent. This deadlocked the talks.

An average of 3¢ was granted—but not in wages. It's to be applied to wage study.

Reynolds' negotiations also bogged down—but more seriously. A strike was called for 9 plants. Fabricating plants at McCook and Phoenix were actually shut down and a shutdown was started at the Troutdale reduction plant. At the other six, the walkout was only threatened and never came off, thanks to speedy settlement.

While some metal production was lost as a result of the slowdown at Troutdale, no damage was done to the potlines. Had the pots been allowed to cool completely, this probably would have caused trouble. Strike started Sunday, Aug. 1, but pots weren't cut until Monday and a skeleton crew was back at the potlines Monday night by special arrangement.

Production was stopped dead at the two fabricating plants but this

ALUMINUM: Prices Trail Costs

Industry getting back to normal after wage-price round . . . Firms absorb part of cost increases . . . Canadian metal boosted, too . . . Increases vary—By R. L. Hatschek.

doesn't entail the danger to facilities that results from stoppage of a reduction line.

New Reynolds contract was signed Wednesday and workers returned immediately to their jobs. This pact is essentially the same as that signed by Alcoa.

Kaiser had the advantage of an extra month to watch the rest of the industry settle down. Current contract doesn't expire until Aug. 31. It's a virtual certainty that this firm will follow the general wage and fringe pattern.

Price increase brings standard 99 pct aluminum pig to 20.5¢ per lb, and 99 pct ingot to 22.2¢.

Price sheets for mill products began to flow from main offices almost immediately with Alcoa raising sheet and plate prices effective Aug. 6, Kaiser following Aug. 7. This hike ranges from 2.5 to 3 pct, depending on gage and alloy.

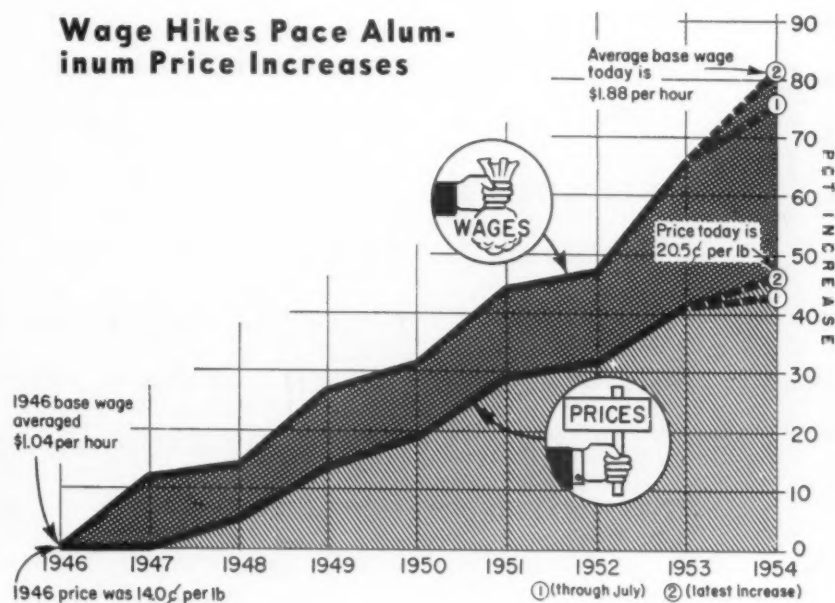
Other Alcoa lists came Monday, Aug. 9, including extruded shapes, extruded rod and bar, and tubular products. Reynolds' new lists were expected this week.

Significantly, firms attributed the need for higher prices to recently increased material and service charges as well as boosted labor costs. They also indicated that price increases only partly cover these higher costs.

New price lists for mill products show a wide variety in the extent of increase. They depend not only on recalculated costs but also on competitive market conditions.

This trend is noted in one of the very first of the new lists posted by Alcoa. The firm did not change prices on drawn irrigation and construction pipe. Reason: Cheaper welded aluminum pipe is giving some rough competition.

Wage Hikes Pace Aluminum Price Increases



Wage rate does not include overtime, other extras, or fringes.
Price is for 99 pct minimum aluminum pig.

This announcement is neither an offer to sell nor a solicitation of an offer to buy any of these Debentures. The offer is made only by the Prospectus.

\$300,000,000

(of which \$75,000,000 are not publicly offered)

United States Steel Corporation
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Due \$30,000,000 on each August 1, 1955 to 1964, inclusive

Interest payable February 1 and August 1 in New York City

<u>Maturities</u>	<u>Interest Rates</u>	<u>Maturities</u>	<u>Interest Rates</u>
1955	1.30%	1960	2.50%
1956	1.80	1961	2.55
1957	2.05	1962	2.60
1958	2.25	1963	2.65
1959	2.40	1964	2.65

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SMITH, BARNEY & CO. STONE & WEBSTER SECURITIES CORPORATION

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WHITE, WELD & CO.

July 29, 1954.

Eliminate Confusion

"For several years the aluminum industry has felt the need for an alloy designation system which would be simple and adequate to meet the tremendous growth of the industry. We believe that the new alloy designation system developed by The Aluminum Assn. for wrought aluminum and aluminum alloy products will fill this need and allow ample additional numbers for the industry's future growth. We also believe that the acceptance of this system by the industry and users will eliminate the confusion which has developed due to numerous systems"

—Donald M. White, Secretary, The Aluminum Assn.

♦ ON OCT. 1, 1954, the aluminum industry will undergo a quiet revolution—a revolution designed to end confusion through standardization. On that date a new system of alloy designations for wrought aluminum will start.

Designed painstakingly by a special committee of the Aluminum Assn., the system covers all present wrought alloys and is flexible enough to handle any future requirements that can be foreseen. The 7-man committee

was appointed in October 1952 and represented each of the three major producers plus other aluminum firms. Most of the impetus behind the move came from the Association's sheet division with firm backing of the extruded products division.

Official stamp of approval was given this summer.

Somewhat similar to current steel alloy designations, the new system consists of 4-digit numbers with the first digit indicating the general group to which the alloy belongs. Last two digits identify the specific alloy or the aluminum purity. Second digit refers to any modification of the original alloy or impurity limits.

The 1xxx series indicates 99.00 pct and higher purity with the last two digits expressing purity to 0.01 pct; these are identical to the two digits to the right of

the decimal point of the minimum aluminum purity. Second digit refers to modification of impurity limits or special attention to specific impurities. Thus, 99.30 pct pure aluminum without any special controls is designated 1030. Same purity with special control of specific impurities results in designations like 1130, 1230.

Differing from the 1xxx series, the 2xxx through 8xxx series code the groups by major alloying element as follows:

Major Alloying Element	AA Number
Copper	2xxx
Manganese	3xxx
Silicon	4xxx
Magnesium	5xxx
Magnesium and Silicon	6xxx
Zinc	7xxx
Other element	8xxx
Unused at present	9xxx

In these groups, the last two

Aluminum Alloy Designation Conversions

OLD Commercial Designation	NEW AA Number	OLD Commercial Designation	NEW AA Number	OLD Commercial Designation	NEW AA Number	OLD Commercial Designation	NEW AA Number
99.3*	1230	4S	3004	A50S, K15S, R30S	500S	72S	7072
99.6, CD1S	1160	XA5S	X300S	XD50S	X540S	75S	7075
99.75†	1175	11S	2011	A51S	61S1	B77S	7277
99.87, EB1S	1187	14S, R301 Core	2014	XB51S	X62S1	XA78S	X7178
EC**	EC	XB14S	X2214	J51S, K160	69S1	XB80S	X8280
AA1S	109S	XC16S	X2316	52S	50S2	K112	8112
BA1S	1099	17S	2017	F52S	56S2	K143, C43S, 44S	4343
CA1S	1197	A17S	2117	53S	60S3	K14S, 43S	4043
AB1S	108S	18S	2018	B53S	62S3	K1S5, A50S, R30S	500S
EB1S, 99.87	1187	B18S	2218	XD53S	X64S3	K1S7, C57S	53S7
FB1S	1090	F18S	2618	E53S	65S3	K160, J51S	69S1
AC1S	1070	24S	2024	A54S	51S4	K162, R306‡	6003
BC1S	1080	25S	202S	B54S	52S4	LK183	5083
CC1S, R998	1180	B2S5	222S	X5S5	X50S5	K186	5086
JC1S	107S	32S	4032	56S	50S6	R301 Core, 14S	2014
AD1S	10S0	43S, K14S	4043	XC56S	X53S6	R30S, K1S5, A50S	500S
BD1S	1060	C43S, 44S, K143	4343	C57S, K1S7	53S7	R306, K162‡	6003
CD1S, 99.6	1160	XE43S	X4S43	61S	6061	R308††	1130
ED1S	11S0	44S, C43S, K143	4343	62S	6062	R99S	123S
AE1S	1030	45S	404S	63S	6063	R998, CC1S	1180
BE1S	114S	50S	50S0	66S	6066	R399	8099
2S	1100			70S	7070		
3S	3003						

*Cladding on Alclad 24S (Alclad 2024). †Cladding on No. 2 Reflector Sheet. **EC—The designation for electrical conductor metal is not being changed since it is so firmly established in the electrical industry. ‡Cladding on R301 and Alclad 14S (Alclad 2014). ††No. 1 Reflector Sheet.

If miniaturization is a problem BERYLLIUM COPPER MAY SOLVE IT



THE PROBLEM. Aware of the trend to smaller, lighter products, Edison engineers set out to create the V.P. Voicewriter—a personal dictating machine compact enough for carrying in a brief case, yet sturdy enough to match the performance of larger units. Several of the V.P.'s vital parts pre-

sented a serious problem of material selection. Besides meeting the over-all objective of space saving, these parts would be required to have a variety of special properties to facilitate assembly and to maintain Edison's high standards for service-free performance.



THE SOLUTION. Thanks to high strength, versatile Berylco beryllium copper, these critical components do a big job, take up little room in the production model of the V.P. Berylco provided every

required feature—both space and performance requirements—in more than adequate measure. And the V.P. was easier to assemble because several of the Berylco parts could be highly stressed without damage.

PERFORMANCE PLUS. Edison selected Berylco beryllium copper not for one valuable property, but many. Conductivity, hardness, stress resistance, wear resistance, nonmagnetic qualities, spring qualities, ability to be fixture heat treated without loss of elasticity—every one was important. In all these requirements Berylco delivers performance *plus*. That's why it has enabled manufacturers of such diverse things as bearings, precision switches, controls and machine tools to make smaller, lighter, more efficient products. Berylco can help you, too. For sample material or engineering assistance, write THE BERYLLIUM CORPORATION, Dept. 4-H, Reading 6, Pa.

Tomorrow's products are planned today—with Berylco beryllium copper

RAW MATERIALS

digits do not indicate purity. They designate the specific alloy, generally the same as current alloy numbers. New designation for 24S will be 2024, for instance. Second digit in the 2xxx to 8xxx series indicates a modified alloy, replacing the current use of a letter. Example: alloy 17S will be 2017, alloy A17S will be 2117. Experimental alloys will continue to be prefixed by the letter "X", which will be dropped when the alloy becomes standard.

Retain Some Designations

New alloys will be labeled consecutively in the last two digits, starting with xx01.

"Alclad," the designation for an alloy coated with high-purity aluminum, will be retained. Thus, Alclad 75S will be known as Alclad 7075.

Also being continued is the method of identifying temper conditions which has been in effect since Dec. 31, 1947. This will still follow alloy designation and will continue to be separated by a dash. Examples: 3S-O will be 3003-O; Alclad 24S-T81 will be Alclad 2024-T81; and 75S-T6 will be 7075-T6.

Deference to tradition is shown in only one alloy—EC, which stands for Electrical Conductor metal. This designation is so firmly rooted in the electrical industry that a shift was felt unnecessary and undesirable.



"I admit Hartman gets things done—usually by doing them himself."

♦ **FIRST** shipload of iron ore to arrive in the U. S. from the recently opened Quebec-Labrador mines (*THE IRON AGE*, July 8, 1954, p. 50), was hailed at a dock-side ceremony in Philadelphia last week.

The occasion, attended by more than 1000 industrialists, engineers and government officials, also marked the formal opening of Pennsylvania Railroad's new, \$10 million ore-receiving facilities located at Greenwich Point on the north bank of the Delaware River.

Ship 20,000 Tons

Over 20,000 tons of high grade ore from the new Canadian field made the 1365-mile trip from Sept Iles, mine's terminal on the St. Lawrence River, in 5 days aboard the cargo vessel, *S. S. Hawaiian*. Ship is one of several converted C-4 type carriers purchased from the government by Ore Transport, Inc. (subsidiary of Iron Ore Co., operator of the Labrador project).

The *Hawaiian* and her sister ships were adapted in Japan from standard cargo hulls by installation of special combination tankbins capable of transporting either ore, or, after thorough cleanout, crude oil.

New ore pier, operated by Tidewater Dock Co. for the Pennsylvania R.R., will be a major receiving point for shipments from the new field, expected by Iron Ore Co. officials to total about 1.5 million tons this year. Output is scheduled to be stepped up to 5 million tons in 1955, to 10 million the following year.

Belts Speed Ore

Twin conveyor belts 54 in. wide and running the length of the 850-ft pier form the heart of the unloading mechanism. Belts are filled at the rate of 550 ft per minute from hoppers built into two large gantry cranes. Buckets operated by the cranes take 25-ton bites of ore from ship's holds every 45 seconds.

Ore is carried shoreward by the belts at a rate of 6600 tons per hour; dumped into 600-ton hoppers designed to fill cars on the two loading tracks beneath with a single spotting.

At present, dock capacity is

ORE: First Labrador Shipment

Arrival of 20,000 ton cargo marks final stage of 4-year, \$275 million project . . . Unloaded at Pennsylvania RR's new, Philadelphia ore dock—By J. R. Whipple.

limited to unloading two ships simultaneously. Pennsylvania RR's future plans include extending the pier by 450 ft to permit unloading four ships at a combined rate of 8400 tons per hour.

On hand to witness the first Quebec-Labrador ore begin its journey from the *Hawaiian's* holds to Eastern blast furnaces was George H. Love, acting chairman of M. H. Hanna Co.

Hit Peak Efficiency

Last year in producing record tonnage of steel the industry also piled up record totals in use of many raw materials—but improved material quality and better efficiency permitted smaller use of some materials per ton of steel.

Economies included lower amounts of ore, coke and limestone for each ton of pig iron made. Better ore quality, largely resulting

from more beneficiation, was the cause. At the same time, total use of these raw materials topped all previous years with the steel industry consuming 137.2 million net tons of iron ore, 70.9 million tons of coke and 37.9 million tons of limestone.

Steel for Defense

All defense programs, including atomic energy, received about 5.6 million tons of steel direct from mills in 1951; about 6.3 million tons in 1952 and about 6.1 million tons last year, American Iron and Steel Institute reported recently.

Direct shipments of steel to defense programs accounted for 7.1 pct of total 1951 shipments. They accounted for 7.6 pct in '53.

Figures do not include shipments to manufacturing industries for the output of components incorporated in defense end-items.



FIRST iron ore shipment from Quebec-Labrador mines arrived at Philadelphia last week. In a ceremony celebrating the event were (l to r): G. H. Love, M. A. Hanna Co.; Mayor J. S. Clark, Jr., of Philadelphia; E. C. McAuliff, Delaware River Port Authority; Capt. P. J. Sungals; Gov. J. S. Fine of Pennsylvania; J. M. Symes, Pennsylvania Railroad.

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CONSTRUCTION

Spending:

Construction outlays hit \$20.1 billion so far in '54.

Construction expenditures totaled a record \$20.1 billion in the first months of 1954 after hitting \$3.5 billion in July.

July's construction report shows that the industry continued its surge. After seasonal adjustment, the month's total was at an annual rate of \$37 billion.

Expenditures for private construction, commercial building and publicly-financed building were at an all-time high for the month and set new records for the January-July period. Home building, public utilities and highway construction also remained at a peak.

The value of new work on private residential building totaled more than \$1.2 billion in July 1954. This was 10 pct above July 1953, and exceeded the level of all months since October 1950.

The high dollar volume this July reflected a greater-than-usual rise in nonfarm housing starts during June.

What Gained Most

Comparing the record volume for January-July 1954 with the first 7 months of 1953, private expenditures (\$13.8 billion) were 4 pct higher, and public outlays (\$6.3 billion) were about the same. Increased spending by state and local governments offset a decrease in Federal spending.

Greatest dollar gains over 1953, during the first 7 months, were in offices, stores, and other kinds of commercial building; private residential building; road construction; and educational (private and public) building, in that order.

January-July expenditures for sewer and water systems, public utilities, churches, and recreational facilities also were higher.

Federal outlays for military facilities, however, were down over the year, by almost two-fifths. Expenditures were also considerably less thus far in 1954 for both private and public industrial building, public housing.

♦ A RECENT ISSUE of a UAW local publication in Detroit led off like this:

"This past week, Chrysler ABD Corp. (Auto Body Div., formerly Briggs) officials notified the Local Union that production on the 1954 Plymouth would officially end as of Aug. 5, 1954, and production of the new 1955 model would not begin until the end of September, 1954. This means that close to 15,000 members of Local 212 will be out of work for a minimum period of 7 to 10 weeks.

"The pending shutdown marks the first long model changeover since the late 30's, when 2 to 6 months shutdowns were normal in the automobile industry."

Market Is Main Factor

Not all segments of the auto industry will be as hard hit as Local 212. But the obvious return to the prewar auto custom of sometimes lengthy shutdowns for model changes is evident everywhere in the auto industry.

Shutdowns for model changes depend on two factors: the degree of change in the model and the market position of the automaker. At one time these factors carried equal weight, but vast improvements in changeover speed have made the market the dominant factor in determining changeover time.

Ford and Chevrolet, for example, have equally strong market positions. As a result, both will be closed for only short periods ranging from days to a few weeks at most. However, Chevrolet will be closed somewhat longer because tooling for a new engine is added to the problem of a changed body, which both face.

See Unemployment Peak

Chrysler lines have not enjoyed a successful market year and this has contributed to early shutdowns, although new models are not expected until early winter. Furthermore, Chrysler's decision to make complete styling changes was made late and resulting complications require a longer period of downtime.

Chrysler, which is Detroit's biggest employer, will bear a lot of

AUTOS: Shutdowns Hit Detroit

Lengthy changeovers for '55 models hit auto industry employment . . . Market conditions set shutdown period . . . Ford, Chevy will be shortest—By R. D. Raddant.

the brunt of Michigan unemployment, expected to reach over 300,000 at the peak of the downtime.

The shutdowns would have caused only a ripple in prewar years. Strong automotive demand in the past decade has made Detroit accustomed to steady employment. It goes without saying that serious unemployment now will be reflected next year when the UAW goes to the mat with the auto industry at the expiration of the 5-year contract.

Every hour lost to a union member because of shutdowns will be recalled when Walter Reuther lays his demands for a guaranteed annual wage on the negotiation table.

Independents Worse Off

Running down the plant shutdowns list, GM divisions are not expected to be down for very long periods. Pontiac, which plans both a new body and engine, will be down longer than Buick, Olds and Cadillac, which are all in stronger market positions and plan only faceliftings.

Among the independents, Packard will idle about half of its employees for possibly 2 months. Ex-

tensive body revisions and a new engine contribute to the long lay-off in addition to high dealer inventories.

Nash and Studebaker have been off-again, on-again for several months and model downtime will probably be added to vacation and inventory for quite lengthy periods. Hudson and Kaiser-Willys production records have not maintained very steady employment, and changeover periods will be drawn out.

The early shutdowns will have the effect of leaving the market unglutted by unsold 54's when the new 55's hit the market. Furthermore, the model introductions will start in the early fall and should be completed by the end of December.

It is hoped that the return to the prewar pattern of fall introductions will level out the production year, instead of forcing first quarter production records to be ready for the spring sales boom.

Ready New Corvette

Taking the engine picture a step further, the new Corvette powerplant is expected to turn out about 190 hp.

As the new cars shape up, some Ford engineers are already kidding their Chevrolet counterparts about adopting Ford features.

These include the ball-joint suspension, box section frame, Hotchkiss drive, and suspended brake and clutch pedals. However, Chevrolet will match these with "firsts" of its own and everything is expected to end up about even.

Don't forget that Chevrolet will not scrap its six, but V-8 production will start out at about 30 pct of total production.



CAPACITY: ODM Plugs Gaps

ODM is studying U. S. capacity to produce critical components in event of war . . . Recommendations may mean more orders for machine tools, steel plates, forms.

♦ NEW government orders for machine tools, steel plates, and forms may be in the works as a result of recommendations filtering into the Office of Defense Mobilization from a score of study groups surveying possible wartime capacity to produce critical components.

Increased activity in plants producing components may also be in the offing as new demand is generated for their products or unfinished parts.

ODM, as part of its program to prepare the nation's industrial base for all-out war by filling production gaps, has stepped up its study of components production, increasing to 30 the number of areas being surveyed (see table).

Store Heavy Steel Plates

One such group—composed of Commerce and Defense Dept. staff members and industry consultants—has almost finished looking into present capacity for production of high-pressure steam boilers.

Its findings: a production deficiency would be present in time of full mobilization even if several producers agreed to use tax amortization to build up capacity because of the limited civilian market for their product. The group has recommended that the government pay acquisition and storage costs of a 90-day inventory of heavy steel plates and other steel products made by boiler manufacturers.

Before recommending a government-financed expansion program, the task force is waiting for information on the need for turbines in event of full mobilization. The propulsion steam turbine and turbine-driven gear study group

has not yet determined the deficiency in this category because of uncertainty as to the use of alternate power plants.

Stockpile Tools

Talks in progress by the other groups reveal that various methods are being considered for combating deficiencies in components.

Alternatives include government-financed expansion, stockpile of machine tools by the government to permit rapid expansion in an emergency; stockpile of parts and unfinished components which could be finished quickly,

Components Under Study By ODM

STEEL:

Boilers; ball and roller bearings; chain and rope fittings; automotive wheels, axles, forged steel flanges and welded fittings; gears; forgings over 5000 lb; castings over 10,000 lb.

NONFERROUS:

Forgings; jewel bearings; optical elements.

INSTRUMENT:

Actuators; aircraft instruments; gyroscopes; precision fasteners; relays; transformers and switchgear.

MACHINERY & PARTS:

Aircraft valves and fittings; compressors; fans and blowers; fractional horsepower motors; heat exchanger and condensers; hydraulic couplings; diesel engines; non-diesel internal combustion engines; motors, generators, and motor-generators; pumps; tackle blocks; turbines and turbine gears, and valves other than aircraft and plumbing.

and industry-financed expansion with the help of government tax incentives.

In addition to the 30 items now under study or soon to be looked at, ODM has another list, this one classified, of components due to be surveyed in the future.

Called Back for Review

One trouble the 200-odd industry men and the government staffers are encountering in determining deficiencies is the rapidly shifting mobilization base requirements for the end products, constantly being reviewed by the Defense Dept.

In many cases, the ODM study groups will be called back to review the defense requirements for components and make new recommendations as conditions change.

Award Ship Contracts

Bath Iron Works, Bath, Me., has been awarded a contract to build three destroyers costing \$46.5 million, the first contracts to be awarded by the Defense Dept. under the 1955 shipbuilding program.

Three other similar destroyers, of the DD-931 class, are under construction at the Quincy, Mass., shipyard of the Bethlehem Steel Co. under the 1954 program.

The contract with Bath is the first of some \$733 million for new ship construction and \$122.5 million for conversion work in the new fiscal year, a great deal of which will be let to private shipbuilding yards.

Contracts Reported

Including description, quantity, dollar values, contractor and address.

Refrigerator, 2662 ea, \$252,094, Frigidaire Sales Corp., Dayton.

Tractor, wheel type, 6 ea, \$224,160, LeTourneau-Westinghouse Co., Peoria.

Microphone T-170, 19600 ea, \$134,848, Roanwell Corp., Brooklyn, N. Y.

Radio transmitter, 58 ea, \$99,622, George Varon & Co., Philadelphia.

Recorder reproducer, 659, ea, \$591,308, Telectro Industries, Corp., Long Island City, N. Y.

AN/GRC—26 radio set, 140 ea, \$1,754,005, American Mach. & Foundry Co., Boston, R. J. Pfeiffer.

Typewriters, non-portable, \$323,465, R. C. Allen Business Machine, Inc., Grand Rapids, Mich.

Trainers, flight simulators, 2 ea, \$950,000, Westinghouse Air Brake Co., Pittsburgh.

Directional gyro. roll stabilizer, 134 ea, \$1,025,217, Kearfott Co., Inc., Little Falls, N. J.

Engines and special tools, 47 ea, \$1,807,494, Continental Aviation & Engineering Corp., Detroit.

Report To Management

Why Business Is Headed Up

Right now you're probably counting on a business pickup in the fall. And the odds that you're right are overwhelmingly in your favor.

You can certainly figure construction activity will continue to carry the economy the way it has all through 1954. Construction contract awards during the first half of '54 have been running at an all-time record rate—17 per cent ahead of last year.

And since awards precede actual construction, you can be sure there'll be a lot of building activity throughout the rest of the year. Construction industry is headed for a whopping \$36 billion year.

What's Happening With Defense Spending

Watch for continued fading of two factors that started the recession—decreased defense spending and over accumulation of inventories at the manufacturer's level.

Cut in defense outlays during fiscal '54 amounted to around \$4 billion. Outlay figured for fiscal '55 is only \$700 million less than the current defense spending rate so this cutback won't have much effect on the economy.

There's even a very good chance defense spending will actually be upped through use of available but previously uncommitted funds.

On inventories, latest figures show manufacturers in June cut stocks \$300 million below the May level, and \$1.6 billion under June a year ago. It won't be long before manufacturers find their stocks are reaching dangerously low levels (some already have) and will be forced to step up their orders. This trend will be apparent within the next few months.

You can also figure steel is due for an upturn in the fall. Automotive industry's

earlier than usual start on new model introductions will be a factor in this development.

The Workweek Tells a Lot

Another indicator of the coming business firming is the recent increase in the length of the factory workweek.

You can figure that when business gets rough employers cut the workweek before they start laying off employees, and when business picks up they usually lengthen the workweek before taking on new workers.

The Consumer's in Good Shape Too

Other trends to watch which indicate brisker business in the fall: consumer credit is on the rise; so is consumer disposable income.

You can also expect the new tax revision law to stimulate business through its more liberal depreciation policy and the better break given stockholders.

Further signs of the coming uptrend are the firmness of retail sales and the surprisingly strong financial position of many many companies at the end of the second quarter.

Survey by National City Bank of New York of 660 corporations shows that net income after taxes during the first half of 1954 averaged 2 per cent more than in same period last year.

What a Little "Nudge" Will Do

Also pushing prospects for a business pickup is the Administration's current "nudge" policy which consists primarily of letting government contracts more quickly than usual. The program is largely politically motivated—to make the economy seem on the upgrade when the voters go the polls in November—but its effect will nevertheless be to add force to the general economic upswing that's coming.

INDUSTRIAL BRIEFS

New Moniker . . . Follansbee Metals is the new name for the former Follansbee Metal Warehouses, a division of Follansbee Steel Corp., Pittsburgh.

They've Moved . . . C. A. Roberts Co. moved from 20 S. Aberdeen St., Chicago, to 2401 25th Ave., Franklin Park, Ill., last month.

Distributor . . . Kaiser Aluminum & Chemical Sales, Inc., Oakland, appointed General Smelting Co., Philadelphia, a distributor of Kaiser aluminum ingots.

Gets Order . . . ACF Industries, Inc., received an order from the Delaware, Lackawanna & Western Railroad for 500 50-ton box cars, to be built at the Berwick, Pa., plant of ACF Industries.

First Phase . . . Vanadium-Alloys Steel Co., Latrobe, Pa., completed the first phase of a program designed to modernize its rolling mill facilities with the recent installation of a new 12-in. merchant bar rolling mill.

New Warehouse . . . Dumas Steel Corp.'s new warehouse is at 19th and Noble St., Sharpsburg, Pittsburgh, Pa. The company is moving its entire steel operations and offices to the new location which covers overall approximately 30,000 sq. ft.

Sets Record . . . Fairless Works of United States Steel Corp. set a new industry record for rolling steel ingots into slabs in an 8-hour shift recently. The new all-time high was established on July 27 when 425 ingots weighing a total of 4038 tons were rolled into slabs.

Electrode Plant . . . Westinghouse Electric Corp. opened a new electrode plant in Montevallo, Ala., for the manufacture of welding electrodes and brazing rods.

Elbow Room . . . R & S Tool Co. has moved to new, enlarged quarters at 13100 Enterprise Ave., Cleveland.

Exclusive . . . Carson, Marshall & Co., Philadelphia, has been appointed exclusive sales agents for Chester Blast Furnace, Inc., Chester, Pa.

Acquired . . . American Machine & Foundry Co., New York, will acquire for 10,750 shares of AMF common stock the Sight-Light Corp. of Deep River, Conn. The new subsidiary designs, develops and produces electrical systems and ordnance devices for the U. S. Navy.

Going Up . . . Glidden Co. will construct one of the largest titanium dioxide and sulphuric acid plants in the world in Baltimore.

Film Index . . . More than 80 industrial films on sheet metal work are listed in a new U. S. Commerce Dept. film index, PB 111427.

Now Distributing . . . Whitehead Metal Products Co., New York, is now distributing nonmetal pipe and fittings made of rigid vinyl plastic by Alpha Plastics, Inc., of West Orange, N. J.

Gets Order . . . Thermal Research & Engineering Corp. received a \$55,960 order from the Allison Div. of General Motors Corp. for heat exchangers for use in connection with test facilities on gas turbine engines for aircraft.

Happy Anniversary . . . Kennecott Copper Corp. is celebrating the 50th anniversary of its Utah Copper Div. this month.

Sales Post . . . Hyster Co. is creating a new European division of its export sales department in Nijmegen, The Netherlands. Boris J. Glavash is head of the new division.

Last One . . . Convair, a division of General Dynamics Corp., will deliver the last B-36 bomber off the assembly line to the U. S. Air Force in a special ceremony Saturday afternoon, Aug. 14, at the Fort Worth, Tex., plant.

Honorary Members . . . American Society of Civil Engineers elected Robert J. Cummins, Shortridge Hardesty, and Edward P. Lupfer, to honorary membership, the Society's highest distinction.

Breaks Ground . . . Enamelstrip Corp., Allentown, Pa., broke ground yesterday for its ultra-modern \$300,000 addition. Building site is on Hamilton St., adjacent to its present plant.

Symposium . . . Aircraft Industries Assn.'s National Aircraft Standards Committee has called a national two-day symposium on titanium standard to be held in Cleveland, Oct. 11-12.

Expansion Program . . . Empire Steel Castings, Inc., Reading, Pa., recently completed an \$800,000 expansion and modernization program, which has doubled plant area and tripled production capacity at the Reading Plant.

Selected . . . National Lead Co., New York, selected the Frederick Snare Corp. and the Merritt-Chapman & Scott Corp., both of New York and Havana, Cuba, to perform the construction necessary to expand the nickel plant at Nicaro, Cuba.

Tells Story . . . Micromatic Hone Corp., Detroit, issued a 28-page Anniversary Booklet. It tells the story of the company's growth and contains pictures, illustrations and diagrams that tell the story of the people behind the company and what they have accomplished.

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W AGE



Quality of lightweight magnesium plate is strictly controlled.

a new look at Magnesium!

PLATE IN LARGE SIZES AT LOW PRICES

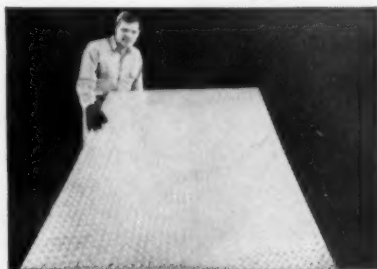
The good news on magnesium plate is Dow's increased capacity—new facilities which are now making longer and wider sizes available at reduced prices.

Also coming in for considerable attention are the important design and fabrication economies made possible by this lightweight metal in large sizes.

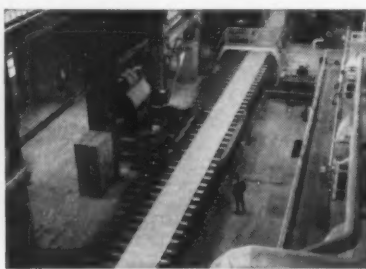
For more information on magnesium, call the nearest Dow sales office or write direct to the Magnesium Sales Department of THE DOW CHEMICAL COMPANY, Midland, Michigan.



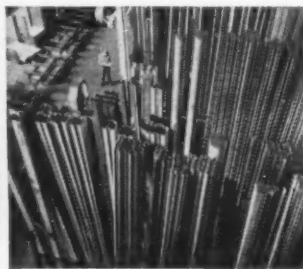
Lightweight, low cost magnesium tooling plate for more practical jigs and fixtures.



Light, safe, strong, low cost magnesium tread plate in the famous Inland 4-WAY design.



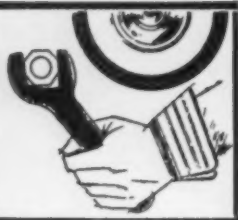
World's first 84-inch magnesium coil mill now rolls sheet and plate to greater lengths and widths.



Lightweight magnesium extrusions are available in many different sizes and shapes.

you can depend on DOW MAGNESIUM





Highway Death Rate Dips—A Little

First quarter '54 continues downward trend in traffic fatalities

... Engineer cars for safety ... Improved production methods are major factor

... New roads, saner drivers still basic—By R. D. Raddant.

◆ IN AN ERA when advertising copy is pointed at automotive speed and power and journalistic sensationalism at highway death and destruction, the year 1954 is on its way to a new low in auto fatality rates.

First quarter of this year shows a rate of 6.1 highway fatalities for every 100 million vehicle miles. This is in line with a downward trend that has continued for several years.

'54 Kills Fewer . . . In 1950 the rate for the first quarter was 7.2 fatalities; in 1951, 7.0; in 1952, 6.8; and in 1953, 6.7. The figures, compiled by the Automotive Safety Foundation, show slightly higher rates for the entire year, but with the same downward trend. This

year's rate is expected to be around 6.4 fatalities for each 100 million miles compared with 7.6 for 1950.

Reason for the lower rate is that in spite of a consistent flow of criticism aimed at the auto industry, safety is being engineered into today's cars with almost every new development.

Built-In Safety . . . And furthermore, in a direction where little credit is ever given, improvement in materials, manufacturing methods and machine tools is responsible to a greater degree than most realize for the safety of today's automobile.

This secondary safety factor, improved methods and materials, is emphasized by Howard K.

Gandelot, General Motors vehicle safety engineer and chairman of the vehicle safety subcommittee of the Automobile Manufacturers Assn.

Have It Fixed . . . While by no means neglecting the other safety factor, Mr. Gandelot suggests that more emphasis be placed in this direction in evaluating safety improvements. New alloy steels, heat treating methods, and precision manufacturing all play a part in automotive safety.

"It's not so many years ago that broken axles were frequent, spindles sheared and king pins broke," he points out. "In our methods of mass production, each car is as safe as the next one off the line. The design of a car can be good, but its safety depends on how it is put together. The automobiles we build today, with just a little occasional maintenance attention, are almost entirely free of mechanical failures. . . . Percentage of accidents due to mechanical failure is very low, and these few are usually attributed to lack of maintenance."

Driving Is Easier . . . The horsepower race, of course, is the most controversial feature of today's automotive design. However, most thinking critics are now agreed that power when you need it is more of a safety insurance than is the temptation to abuse it a safety hazard.

Another factor that may be overlooked is the cumulative effect of decreasing driver fatigue from the powered devices such as automatic transmission, power steer-



SEAT BELTS for all passengers (shown above in standard sedan), would do much to curb serious injuries according to auto safety authorities.

ing, power brakes and even the extremes of automatic seat and window lifts and the automatic light dimmer. More important, they make it easier for even the lightest person to fully control his car.

Increased visibility of new cars through one-piece and now wrap-around windshields and other increased glass area has aided greatly in cutting accidents. Tinted windshields, glare-proof mirrors, turn signals and windshield washers all contribute not only to driving ease but also to safety.

Build Better Brakes . . . Brakes, of course, are the key to safety. While improvements are being made and new developments probed, auto engineers are agreed that braking systems are adequate for today's cars. Redistribution of braking effort (which places almost 60 pct of the braking on front wheels where it is needed) is just one example of braking system improvement.

In evaluating safety there are two approaches: avoiding the accident and passenger protection after the accident occurs. The latter point has come under much discussion recently with resulting recommendations for seat belts, crash pads and the like.

Improve The Driver . . . Seat belts sound fine in theory, but tend to restrict the passenger's movements, can restrict the driver's efficiency. No satisfactory material has yet been developed for a crash pad that will yield to an impact, but won't recover, as foam rubber does, with an impact that can be more injurious than the original blow. Safety glass, of course, is a safety measure that has existed for some time.

But all the safety measures and safety legislation in the world

aren't going to make the car any safer than the driver or the highway. Perhaps some day traffic can be electronically controlled, but until that date driver education must keep pace with the auto and highways must be made to handle its movement before the accident rate can be cut to a really creditable figure.

Engines:

Big Three enter horsepower race with '55 models.

Some startling maneuvers among Ford, Chevrolet and Plymouth have resulted from the battle for horsepower supremacy in the low price field.

As everyone interested in automobiles knows by now, Chevrolet and Plymouth will introduce new V-8's for 1955. Ford, which brought out its own new engine for 1954, must improve its own to match or surpass the others.

It's surprising that some of the biggest news may come from Ford, which logically would have been

expected to make only moderate changes to boost its present 130 hp to match whatever Plymouth and Chevrolet turned out.

However, in the Ford case, it appears to be a "matter of inches," cubic inches of displacement, that is. Reportedly, Ford has had to rework its engine almost completely to raise its displacement from 239 cu in. to a rumored 272 cu in.

To keep the friction low, the desirable way is to increase the bore while maintaining a short stroke. The question, then, is whether there is enough iron in the 1954 block to take the increase.

Exactly what Ford is doing on the engine is known only to Ford, but tooling experts know that a lot of changes are being made. Incidentally, the same pattern of increasing engine size is heard about the Mercury engine.

THE BULL OF THE WOODS

By J. R. Williams




Automotive Production

(U. S. and Canada Combined)



WEEK ENDING	CARS	TRUCKS
Aug. 7, 1954...	107,642*	25,969*
July 31, 1954...	110,266	20,257
Aug. 8, 1953...	114,671	23,000
Aug. 1, 1953...	140,651	27,616




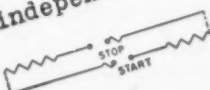
*Estimated. Source: Ward's Reports

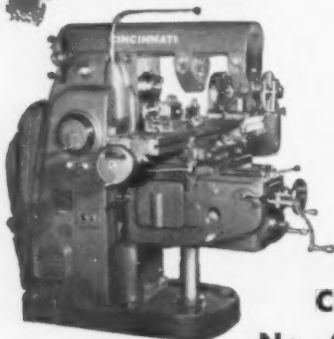
A LETTER TO TOOLROOM AND PRODUCTION MILLING SUPERVISORS

Are you provoked at slow toolroom milling operations and inaccurate work?  Fed up with maintenance bills? You can cure these and other ills of high cost toolroom milling by replacing your old equipment with new CINCINNATI . . .

in the No. 2 range, for example, with Nos. 2ML or 2MI. Reasons why these machines are good medicine for shops of all sizes are many.

Their Dynapoise overarm  smooths out the cutting action. Sixteen spindle speeds 25 to 1500 rpm are quickly selected with a single crank type control.  Sixteen feeds within the entire range of 120 to 1 ratio are selected at the front of the knee with a similar control.

 Long life is promoted through automatic lubrication systems, such as the individual reservoir  for the vertical screw. Reciprocal and climb milling operations can be handled on machines equipped with  automatic backlash eliminator. Control levers are directional and independent for easier handling. Automatic table cycles  available for production setups (extra).



CINCINNATI
No. 2MI Universal
Milling Machine

CINCINNATI

Other advantages of CINCINNATI Nos. 2ML and 2MI Milling Machines may be of even greater value in your shop. May we tell you more about them? Brief specifications will be found in Sweet's Machine Tool File, and complete data may be obtained by writing for catalog No. M-1662-2.

THE CINCINNATI MILLING MACHINE CO.
CINCINNATI 9, OHIO

MILLING MACHINES • CUTTER SHARPENING MACHINES • BROACHING MACHINES • METAL FORMING MACHINES • FLAME HARDENING MACHINES
OPTICAL PROJECTION PROFILE GRINDERS • CUTTING FLUID



THIS WEEK
IN
WASHINGTON

See Slight Edge for Republicans

Surveys indicate political tide favors Republicans . . . But no runaway at polls is expected . . . Study shows U. S. water supplies are inadequate to meet growing industry, population needs—By G. H. Baker.

♦ **CURRENT** grass-roots surveys show that the political tide is now running slightly in favor of the Republicans, but there's no evidence that there will be anything resembling a Republican runaway at the polls this fall.

In Capitol cloakrooms, leaders of both the parties agree privately that neither the Republicans nor the Democrats are going to win an overwhelming victory. The most optimistic Republicans predict their party will win control of the House by about 20 seats—a very narrow working majority.

Democratic leaders for the most part predict they'll win control by about the same majority. It is significant that neither side sees a landslide victory in the congressional elections.

Mr. Eisenhower's program has grown in favor with the voters in recent weeks, it is reported by precinct workers all over the country. But it's far from certain that we will have a pro-Eisenhower Congress, rather than a pro-New Deal Congress, in the legislative driver's seat for the next 2 years.

Not Enough Water . . . Key facilities of the water supplies of the nation's major communities are inadequate to meet population growth and industrial expansion in time of emergency, a new government survey reveals.

An inventory of 548 water supply systems serving 80 million people in the 560 cities and towns with community water systems by the Business and Defense Services Administration shows that average consumption is 12 billion gal,

or an average of 150 gal per capita.

Maximum daily demands run as high as 19 billion gallons, or about 230 gallons per person, 60 pct above the average daily use, the report found.

Many of these systems are overloaded, or approaching full capacity, the inventory shows.

Boost A-Weapons . . . Sharp increases in output of fissionable materials that occurred in the first

6 months of 1954 is beginning to show up in the rapid growth of the atomic weapons stockpile.

New Atomic Energy Commission disclosures indicate several reasons for the rise in production of fissionable materials. New plant capacity came into operation, for one thing. In addition, raw materials were available in greater quantities and there was greater "operational flexibility of the complex of the production facilities."

Stockpiles of weapons are being increased in at least two ways—quantity and variety of weapons. AEC officials now speak of their "family of weapons," rather than "the bomb," indicating that bomb stockpiles include various sizes and types of bombs.

Is Smelter Necessary? . . . Congress has voted to probe the domestic tin smelting industry and to report on whether or not a U. S. smelter is vital to the nation's defense program. A special Senate-House committee is to make its study within the next few months and report its findings to Congress not later than Jan. 3.

Decision to advocate forming the new committee results from congressional reaction to the Eisenhower Administration plan to close the Texas City, Tex., tin smelter.

Congress, disagreeing with the plan, decided the first requirement was a study to determine whether it is vital to national defense to keep the smelter open.

Push for Soft Coal . . . White House concern over the danger of



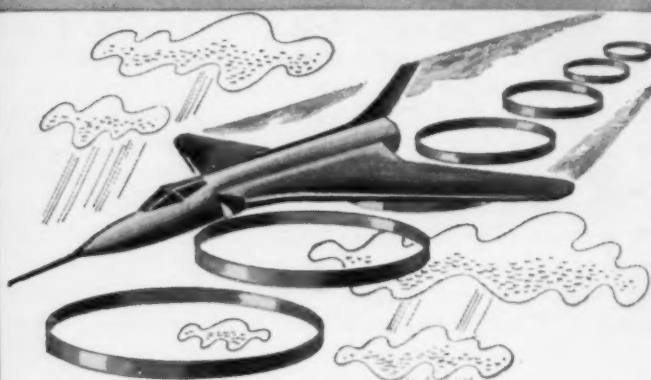
NOMINEE Brig. Gen. Herbert D. Vogel, recently appointed to TVA Board of Directors.



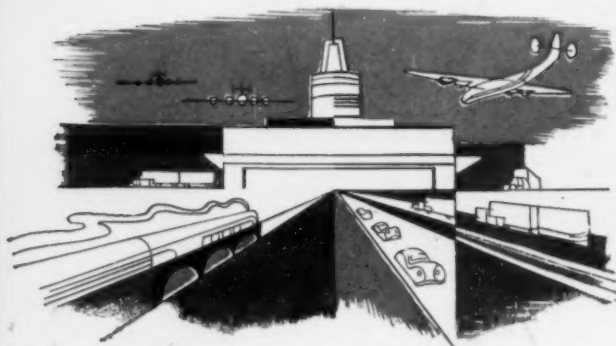
**WE HAVE
LEARNED A LOT
ABOUT
TITANIUM
SINCE 1949**



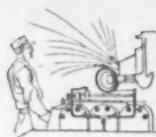
in 1949 American Welding started experimental work on Titanium and in 1950 accomplished the first successful production flash butt-welding of Titanium.



today The use of the "wonder metal" is largely restricted to aircraft use. American Welding annually produces thousands of Titanium rings for jet engines.



tomorrow Who knows — Titanium may be used as widely as aluminum—perhaps even in your product. One thing is sure—welding will continue to be a practical and inexpensive method of fabricating.



WELDING • MACHINING • FABRICATING

**AMERICAN
WELDING**

reduced capacity to produce soft coal in the U. S. has put pressure on a new government commission to come up with some practical answers to the industry's extremely serious problems.

President Eisenhower told the commission the soft coal industry is a "very important part of the defense base," and requires a careful and detailed study that will yield remedies to aid the ailing industry. Mr. Eisenhower says he is concerned about the "danger of serious loss of capacity to produce soft coal."

Members of the study group include Dr. Arthur Flemming, Defense Mobilizer; and representatives of the departments of State, Defense, Interior, Commerce and Labor.

Protection for Northwest . . . Beefed-up air defense in the Pacific Northwest has been ordered by the Air Force to quiet area uneasiness over the possibility of enemy attack. A complete new air division (Ninth) is being created and is to be assigned to take over part of the defensive duties now being handled alone by the 25th Air Division. Together, the two divisions will be responsible for the protection against air attack of the entire civilian and military population of Washington, Oregon, and Idaho.

Metal:

Drop in defense spending cuts government's metal needs.

General tapering off in military spending programs, especially in the aircraft, ammunition and tank-automotive lines, has resulted in decreases in the amounts of steel, aluminum, and copper and brass alloys needed by the government in the fourth quarter of the year.

Defense and atomic energy requirements of steel in the fourth quarter will drop 12 pct under the third quarter to a total of 651,270 short tons.

Affects "B" Items Too

Aluminum needs will drop 7 pct to 106,728,834 pounds, and the need for copper and brass alloys will drop 15 pct to 72,006,604

pounds in the October-December period.

The requirements, announced by the Office of Defense Mobilization, are for "A" products for prime contractors and producers of specially designed military equipment for the defense department.

There are indications that similar drops will be recorded in defense and atomic energy requirements for "B" items, civilian type goods incorporated in military end items. Aluminum needs for "B" products, according to the Business and Defense Services Administration will be only 21 million pounds in the fourth quarter of this year.

Payroll:

Labor Dept. outlines new regulations on overtime pay.

New regulations defining bona fide thrift and savings plans which an employer is not required to count as part of an employee's regular pay rate in computing overtime pay, will go into effect Sept. 3.

The new rules, adopted by the U. S. Labor Dept. under the Fair Labor Standards Act, require generally that employer's contribu-

WASHINGTON NEWS

tion may not exceed 15 pct of the employee's total earnings in a year; that employers may not contribute more than the employee saves in a year without department approval; that contributions must be made by a formula, and eligibility may not be based on hours of work, production or efficiency.

List Exceptions

Stock purchase plans are included in approved savings plans. The labor law requires that employees be paid time and a half for all hours over 40 worked in one week, and states that many fringe benefits be included as regular pay when computing overtime pay.

Among the exceptions to the fringe benefit rule are savings plans to which the employer contributes if they meet Labor Dept. standards. Copies of the new regulations are available from the Wage and Hour or Public Contracts Divisions, Labor Dept., Washington 25, D. C.



SHOWING CONCERN President Eisenhower receives report from Agriculture Secretary Benson on areas needing drought disaster aid.

Which is the *CleCap*?



...it could be both _____ made by
fast economical *CleCap* processes

It just might pay you to take a good look at the special parts you're buying that could be made more economically by CleCap's hot heading or cold extrusion processes. Quite a number of our customers have done it . . . and they like what happened.

The forged blank (a) above was produced for one user. He finished it as it's shown at (b). CleCap pre-forms your non-standard parts for further shaping and machining in your plant or manufactures them complete, ready for your assembly line. You'd be surprised at all the different shapes we've turned out.

You can save yourself tooling and machine time. Take a look at what CleCap offers—engineering skill and experience in applying high production methods and machines to your problems. Anyway, write for folder, "Specials by Specialists".

Cleveland *Top Quality* Fasteners

FERROUS AND NON-FERROUS

Hexagon Head Cap Screws • Socket Head Cap Screws—Plain & Knurled; also Flat and Button • Flat Head and Fillister Head Cap Screws • Place Bolts • Structural Bolts • Tractor Bolts • Square Head Set Screws • Socket Set Screws • Milled Studs

The Cleveland Cap Screw Co.

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TWX CV42

Originators of the Kaufman

**DOUBLE
EXTRUSION**

Process



WEST
COAST
REPORT

Auto Firms Seek Local Parts Makers

Assembly plants need 400 parts from Coast sources . . . Industry ready to double present outlay . . . Pacific shipyards to convert biggest carriers, will build first helicopter transport vessel—By R. R. Kay.

♦ **AUTOMOBILE** manufacturers with assembly plants on the West Coast are ready to double their present \$125 million annual outlay here for parts and sub-assemblies in the metalworking industry—if they can get more suppliers.

Purchasing executives at Chrysler, Ford, and General Motors told **THE IRON AGE** that right now they need a large volume of gas and brake lines, cotter keys, flat washers, gas tanks, mufflers, and auto jacks. As one purchasing agent put it, "The business is here. Those firms who qualify will get the green light pronto."

This is good news for those aircraft parts manufacturers who are in the doldrums because of Defense Dept. airframe production stretch-out.

Need Many Parts . . . Auto assembly industry needs more sources for the 400 different items it buys. It wants: sheet metal parts, forgings, diecastings, moldings, radiators, wheels, nuts, U-bolts, machine screws, hydraulic brake cylinders, tie rod assemblies, stampings, pressed metal products, bumpers, and springs, both front coil and rear leaf. Auto-makers are also looking for more malleable iron parts producers.

California auto plants assembled 658,958 cars and trucks last year, second only to Detroit. The Big Three did most of the buying. Chrysler spent about \$13 million, Ford over \$50 million, and GM \$55 million for metal parts and sub-assemblies.

And what of the future? One

thousand new residents are coming to California each day—with no let-up in sight. Oregon and Washington report large and steady population growth. This means a demand for more and more cars, with more and more business for parts manufacturers.

Convert Big Flattops . . . Welcome flags will fly at San Francisco and Puget Sound (Wash.) Naval Shipyards. The 45,000-ton carrier *Midway* will go next May



FENCED-IN MOUNTAIN at Palisades Dam on Idaho's Snake river where 20,000 sq ft of wire fencing, braced with cables is used to hold huge boulders in place, protect workmen and dam.

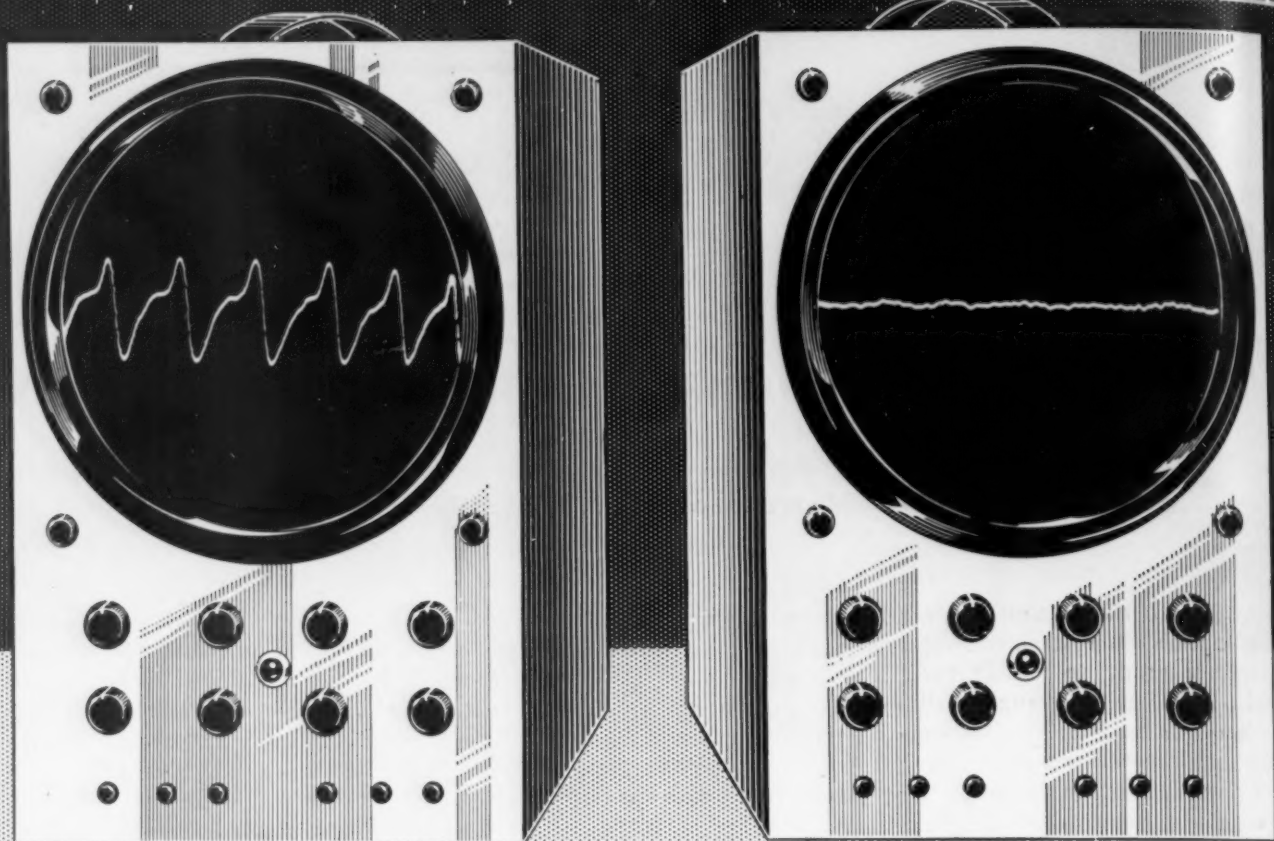
to the Puget Sound yard under a recently awarded \$40 million 2-year contract, joining her sister ship, *Franklin D. Roosevelt*, for conversion to jet airplane carriers.

The contract supplies the Northwest with 800,000 manhours of work, and assures full employment at the yard through summer 1956, when the *Roosevelt* is due out. No major increase is expected in the present 14,000 payroll.

San Francisco's Naval Shipyard will convert an escort aircraft carrier to an assault helicopter transport. The newly assigned job is expected to cost \$5-6 million and require 480,000-640,000 man-hours. Shipbuilders here hope this will be the first step in making their facility the center of naval helicopter-carrying vessel construction.

Report Uranium Find . . . Atomic Energy Commission officials report three "very encouraging" uranium discoveries in southern California. E. E. Thurbow, chief of the Salt Lake City exploration branch, AEC, located them in eastern Kern County, the San Bernardino Mountains, and the Mojave Desert. An AEC spokesman said a processing plant might be built in the area.

Shipbuilding Program Set . . . A \$65,800,000 private shipbuilding and ship-buying deal is announced by American President Lines, San Francisco, and the government. The agreement calls for construction of 2 passenger-cargo vessels and purchase of 6 ships from the Maritime Board.



WHEN A STRAIGHT MINERAL OIL was used to lubricate the ways, an 0.0008" jump at frequency of 2.74 cycles per second was noted.

WHEN SUNOCO WAY LUBRICANT was used on the ways, the jump was too small to measure, proof that this medium stops slip-stick motion.

TEST PROVES SUNOCO WAY LUBRICANT ENDS SLIP-STICK TABLE MOTION

How effectively Sunoco Way Lubricant stops slip-stick table motion is graphically illustrated by these oscillograms. The pattern on the left was made with a straight mineral oil as the lubricant; the other was made with Sunoco Way Lubricant on the ways. Both patterns are magnifications of changes in rate of table travel

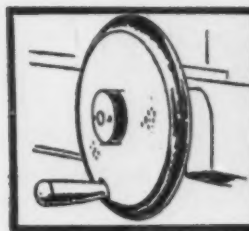
and were obtained under identical conditions.

You can stop slip-stick table motion, protect the ways, get better surface finishes, cut production losses with Sunoco Way Lubricant. Try it in your shop. For more information, call your nearest Sun office or write SUN OIL COMPANY, Philadelphia 3, Pa., Dept. IA-8.

INDUSTRIAL PRODUCTS DEPARTMENT
SUN OIL COMPANY



PHILADELPHIA 3, PA. • SUN OIL COMPANY LTD., TORONTO & MONTREAL
Refiners of the famous Blue Sunoco Gasoline and Dynalube Motor Oils



**MACHINE
TOOL
HIGH SPOTS**

Expect Boom in Replacement Demand

Survey shows capital goods replacement expenditures now run about \$10.4 billion per year . . . Will hit \$15 billion by 1960, \$26.7 billion by 1975 . . . Toolmakers should get share of increase—By E. J. Egan, Jr.

♦ **MEASURED** in 1953 dollars, U. S. industry now owns about \$60 billion worth of capital equipment over 10 years old, will have almost \$200 billion tied up in this age bracket by 1975. This means, prospects for replacement of capital goods over the next two decades are excellent.

This encouraging picture of future equipment demand was spotlighted by Machinery & Allied Products Institute in several recent studies. And for machine tool builders the MAPI statistics provide extremely good news.

Historical pattern of U. S. industry shows that it adds to its capital equipment inventory at about 3 pct per year. Since this new installation rate exceeds the annual rate of machinery retirement, the value and average age of equipment in use goes up.

Increase Coming . . . Current replacement expenditures for industrial equipment are about \$10.4 billion annually. Projected figures show that this sum will increase to \$15 billion by 1960 and to \$26.7 billion by 1975.

Bearing in mind that the upward trend in the average age and annual replacement of capital goods is based on normal industrial growth, equipment makers can probably anticipate a steady increase in business. But through increased research and sales effort machine tool builders should be able to reap more than normal benefits.

Conceivably, enough extra quality and productivity can be embodied in future machine tool

models to force a faster than usual replacement of tools in current use. This would help keep the average age of machine tools in use at a suitable minimum.

3 Pct Not Enough . . . Builders find themselves in the normal growth pattern again now that the Korean situation has tapered off. They're happy to be rid of government controls, but not quite satisfied with the normal 3 pct annual increment that MAPI has charted. The emergency high production periods of World War II and the Korean emergency have whetted their appetites for a higher volume of business.

To increase business tool builders' research departments are going all out. Automation is the big thing to show the prospect who wants to hang on to his present equipment. And automation is what the buyer will get.

It's no secret that the National Machine Tool Builders' Assn.'s 1955 show in Chicago will be "automated" to the utmost.

Builders are also tuning up for the prospect who would like to

buy new equipment but says he "just can't afford it."

Many small machine shops were set up with low cost government surplus equipment after World War II. In their efforts to keep going the past few years, many of them sold their services too cheaply. Now, with machine tools wearing out, they don't have enough money to buy new tools.

Financing Helps . . . Only answer to the "no money" complaint is to offer some form of financing. Banks and industrial financing firms are anxious to help out. According to S. D. Maddock, president of the C. I. T. Corp., "Much of the lag in modernizing capital equipment is caused by failure to understand that income producing machinery can now be purchased on terms which permit it to pay for itself."

And where a straight loan to purchase new equipment doesn't seem to be the answer, the prospect is gradually being encouraged to lease the tools he wants.

With backlogs at their lowest level in several years, machine tool builders are generally confident that new machines and merchandising plans will soon step up business volume.

MIT Course . . . Massachusetts Institute of Technology will offer a special 2-week summer program on "Numerical Control of Machine Tools" from Aug. 23 to Sept. 3. The course was added to meet a heavy demand for technical information by engineers contemplating use of numerical control systems.



This General Electric steam turbine generator can produce enough electric power to supply light for a city of 400,000 people.



Chateaugay Pig Iron Used In Casting 55-Ton Exhaust Hood

Castings like this huge turbine exhaust hood are produced regularly by General Electric.

Their foundry specifications are strict. To meet these requirements they use only the finest pig irons in their cupola mixture—including Republic Chateaugay.

Many casting producers use Chateaugay iron to obtain high strength, uniformity and machinability throughout every casting. Chateaugay castings have an unusually fine and uniform grain structure, and surfaces

with high wear-resistance.

In addition, Chateaugay castings machine easily and economically.

For the complete story on Chateaugay, the low-phosphorus, copper-free pig iron, call in a Republic Pig Iron Metallurgist. There is no cost or obligation for his services. Let us know when you would like him to call.

REPUBLIC STEEL CORPORATION
GENERAL OFFICES • CLEVELAND 1, OHIO
Export Department: Chrysler Building, New York 17, N.Y.

REPUBLIC PIG IRON

"CHATEAUGAY"
Low-Phosphorous,
Copper-Free

REPUBLIC
(Northern)
Foundry, Bessemer
Basic and Malleable

REPUBLIC
(Southern)
Foundry
and Basic





The Iron Age

SALUTES

David T. Marvel

A chance meeting with a company president one summer got him into metalworking . . . but a liking for people, selling talent and a tremendous capacity for work insured his success.

When he took a summer job as a clerk at a swank Atlantic City hotel in 1926, Dave Marvel, Olin Industries, Inc.'s vice-president for sales never suspected that the job would get him into the metalworking field.

But a chance meeting with William G. Clyde, president of Carnegie Illinois Steel Co., led to the offer of a job as helper on an openhearth. Dave accepted the offer and spent the next 23 years directly in the steel industry.

An easygoing Hoosier from Richmond, Ind., Dave has always liked meeting people. He made the most of his summer vacations by taking such varied jobs as assistant tour conductor for American Express in Europe, deckhand on a Lake ore boat and, finally, the openhearth job.

In 1934 Dave embarked on his sales career as a trainee for Timken Roller Bearing Co. Four years later he headed-up Timken's Tubular Products Div. as manager of sales in the home office at Canton, Ohio.

A few years later Dave moved to National Tube Co., where he became assistant manager of sales of the company's specialty division at Elwood City, Pa. Later he was made manager of sales at the Gary works.

Dave joined Olin Industries in 1949 as general sales manager of Western Brass Mills Div. and he's been with Olin ever since except for a period during the Korean emergency when he served in Washington as Assistant Deputy Administrator of the Brass Mills Branch of National Production Authority.

His huge capacity for work and natural sales talent have helped keep Dave on top of his very exacting job at Olin. As vice-president for sales he's responsible for over-all sales, advertising and marketing activities of Olin's metals, explosives, electrical, Ramset, export, cellophane, arms and ammunition, paper and lumber divisions.

As for hobbies, Dave, who lives near New York with his wife and two sons, claims his are, "Work, photography and music."

'round the clock with **WICKWIRE WIRE**

Let's take a look at a typical day in the life of John Q. Citizen—and of the part Wickwire Wire plays in his every-day activities.

bedroom — 7:00 a.m.

John's day starts with the ringing of his alarm clock. Just a quick look around his bedroom reveals a few of the many places where wire, all of it made by Wickwire, is used. There's wire in the bed springs. Bobby pins, safety and common pins in his wife's dressing table. Wire in the lampshades and in the drapery hooks, too. Not to mention the wire that holds the pictures on the wall.



nursery — 7:15 a.m.

Here's the crib from which young John helps the alarm clock in rousing his dad. No less than nine different kinds of wire, all made by Wickwire, go into its making. His toys and his tricycle—even the zippers on his clothes make use of Wickwire Wire.

kitchen — 7:30 a.m.

Before John's wife comes down to make the family breakfast—let's inspect the kitchen. In the range and the refrigerator there are wire racks. The kitchen utensils, wire strainers, electric mixer, the egg slicer, the toaster, and dozens of other kitchen appliances all use Wickwire Wire in their construction.

REMEMBER—whatever your product may be, if it utilizes wire, you can count on Wickwire to meet your most exacting specifications.
for the wire you require — check first with Wickwire

THE COLORADO FUEL AND IRON CORPORATION • Denver and Oakland
WICKWIRE SPENCER STEEL DIVISION • Atlanta • Boston • Buffalo
Chicago • Detroit • New Orleans • New York • Philadelphia

WICKWIRE WIRE

PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION



Watch for the balance of John's day in succeeding advertisements that take him to his office, through his plant, and finally home to the relaxation of his living room.

The Iron Age INTRODUCES

Merlin A. Cudlip, elected acting president, **McLouth Steel Corp.**, Detroit; and **C. Thorne Murphy**, elected a director.

E. J. Heffner, appointed assistant to the president, **Osco Steel**.

Irving B. Purdy, elected a vice-president, **Merritt - Chapman & Scott Corp.**, New York.

Philip W. Scott, appointed director of business development, **Borg-Warner Corp.**, Chicago.

C. F. Breer, **S. H. Egbert**, and **J. L. Hegener**, appointed to board of directors, **McCulloch Motors Corp.**, Los Angeles.

Thurston Klayton, director of engineering research and development, **Luria Engineering Co.**, has been named chief engineer.

Alexander E. Walker, elected a director, **Blaw-Knox Co.**, Pittsburgh.

E. D. Burke, appointed director of advertising and public relations, **The Garrett Corp.**; and **Ken Frogley**, joins as public relations manager.

George B. Secor, elected to the board of directors, **Gregory Industries, Inc.**, Toledo.

George M. Nicholson, named assistant director of labor relations, **Westinghouse Electric Corp.**, Pittsburgh.

Max S. Simpson, appointed assistant controller, **Chance Vought Aircraft, Inc.**, Dallas; **Floyd E. Peavler**, appointed internal audit supervisor.

Arnold J. Beyer, promoted to chief engineer, **Gary Steel Works**, **U. S. Steel Corp.**

H. Richard Steding, III, promoted to chief engineer-executive staff, **Chrysler Corp.**, Detroit; and **John C. Guenther**, promoted to director of technical information, **Engineering Div.**

Gene M. Brown, appointed assistant product publicity supervisor, **Olin Industries, Inc.**, New York.

A. P. Sgambati, promoted to chief engineer, **Lombard Corp.**, Youngstown, Ohio.

John P. Termini, appointed to special application dept., **The Permutit Co.**, New York.

Fred W. Emhardt, appointed chief engineer, **Struthers Wells Corp.**, Warren Div., Warren, Pa.

Donald R. Reid, becomes manager of the insurance department, **Continental Can Co.**, succeeding **E. Duane Sherwood**, who has retired after nearly 40 years of service.

Gene A. Zwerner, appointed district manager, **Link - Belt Co.**, Washington, D. C., offices, succeeding **C. R. Heller**, who has retired.

S. A. Girard, appointed general manager in charge of **Kaiser-Willys**, Toledo automotive operations.

Robert Bader, appointed sales engineer, **Houston Welding Fittings Div.**, **Bonney Forge & Tool Works**, Allentown, Pa.



PAUL H. STARTZMAN, elected executive vice-president, **Oliver Iron and Steel Corp.**



RAYMOND D. LINDSTROM, elected vice-president - Manufacturing, **National Tool Co.**



WALTER E. GREGG, appointed vice-president and assistant general manager, **Rem-Cru Titanium, Inc.**



C. J. CHAPMAN, appointed general sales manager, **Industrial Products**, **National Carbon Co.**

William E. Rasmusson, appointed plant engineer, Oldsmobile Div., General Motors Corp., Lansing, Mich.

Clifford A. Mikus, appointed plant engineer, Pittsburgh Plate Glass Co., Greensburg, Pa.

Ralph A. Corley, Jr., appointed district sales manager, The Champion Rivet Co., succeeding **E. Laterman**, who will remain as special consultant.

Rupert H. Young, appointed manager of sales, Plate Sales Dept., Bethlehem Steel Co., Bethlehem, Pa.

Dave N. Allensworth, promoted to manager, Indiana district, The Parker Appliance Co., Cleveland.

Thomas F. Eichstaedt, appointed assistant manager, Machinery & Tool Div., Joseph T. Ryerson & Son, Inc., Chicago.

Stanley M. Bixler, appointed manager, Continental Can Co., Harvey, La., plant.

E. C. Hansen, appointed manager, newly opened Buffalo office, The C. O. Barlett & Snow Co.

Ralph K. Behr, becomes manager, Boston district office, The Babcock & Wilcox Co., Boiler Div.

Paul A. Miller, becomes manager, Manufacturing - Engineering, Ford Motor Co., Ypsilanti, Mich.

Edward C. Vorlander, appointed managing director, Honeywell-Brown, Ltd., British subsidiary of Minneapolis - Honeywell Regulator Co.

Harry C. Robeson, promoted to sales manager, Stampings Div., Detroit Stamping Co.; **Herbert S. McMillan**, becomes new assistant sales manager, Stampings Div.; and **Dominic J. Damm**, promoted to factory manager.



H. DOUGLASS MOULTON, elected president, United States Steel Homes, Inc.



DR. WALTER L. FINLAY, appointed vice-president and manager of research, Rem-Cru Titanium, Inc.



JAMES W. DICKEY, named president, Ohio Hoist & Mfg. Co., Cleveland, and of Alcaloy Inc., Trenton, N. J.

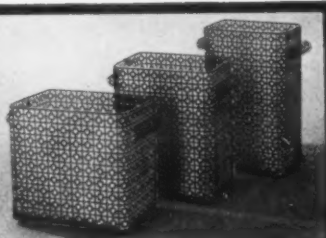


JOSEPH B. CLOUGH, elected vice-president, Sales, National Tool Co.



Distributed by Sun Glo Studios, New York, N. Y.

Ideal design for the Ideal Mfg. Co.



With today's trend toward modern styling, Hendrick is becoming more and more important to fabricators of metal products. Typical of these is the Ideal Mfg. Co. of Oskaloosa, Iowa, who manufactures the attractive home furnishing items shown above using Hendrick's Perforated Metal Square Link design.

And this is only one of hundreds of designs Hendrick can supply in commercially rolled metals and gauges with round, square, diamond, hexagonal or slotted perforations. If you would like further information, write Hendrick today.

Hendrick

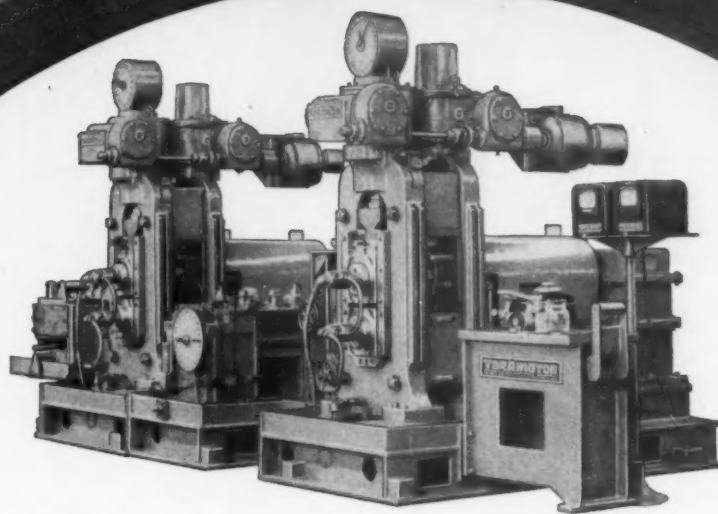
MANUFACTURING COMPANY



37 DUNDAFF ST., CARBONDALE, PA. • Sales Offices in Principal Cities
Perforated Metal • Perforated Metal Screens • Wedge-Slot Screens • Architectural Grilles • Mitco Open Steel Flooring • Shur-Site Treads • Armorgrids

↓

YOU CAN LOWER WIRE ROLLING COSTS



...with a Torrington Flat Wire Mill

SPEEDED PRODUCTION — Torrington Flat Wire Mills achieve finishing speeds up to 3500 FPM.

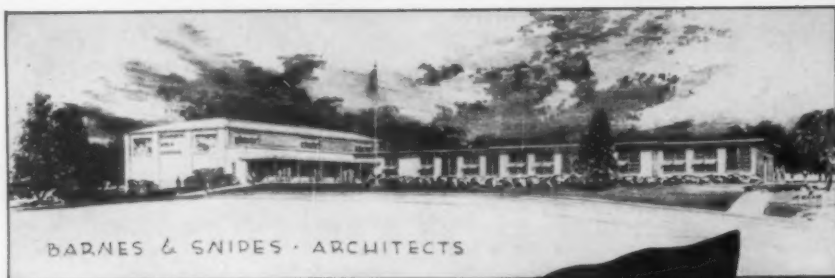
GREATER ACCURACY — Processed wire can be held to tolerances of .00025" in thickness and .0005" in width. Automatic magnetic gauges eliminate waste.

FLEXIBILITY — Combination of two or three flattening stands, with edgers, can accommodate wide variety of work.

DEPENDABILITY — Torrington machines are ruggedly built for years of repair-free service. Easy access to flattening rolls and other major components greatly reduces downtime for maintenance, adjustment and threading.

COMPLETE ENGINEERING SERVICE — Auxiliary mill machinery should be selected only after thorough consultation with experienced engineers. Torrington's engineering staff, backed by the knowledge and skill gained while serving the metal mills for nearly 70 years, will work with you to provide machinery best fitted to your needs. For full information, call or write: Mill Machinery Division, Torrington Manufacturing Company, Torrington, Conn.

THE
TORRINGTON
MANUFACTURING COMPANY
TORRINGTON • CONNECTICUT



Heating Installation by Hausgas, Inc., Washington, Mo.

"Janitrol gas unit heaters helped us build within our budget"

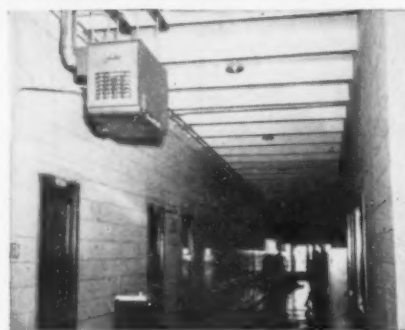
... Statement by Mr. James Dawson, Supt. of Schools, Crawford County, Bourbon, Missouri.



"By using Janitrol Gas Unit Heaters instead of a central heating system, we saved enough to build within our budget. Installed in September, the 17 Janitrol Unit Heaters have proved highly satisfactory!", said Mr. Dawson. The teachers, too, are very happy with this heating system. Each room being thermostatically controlled, each teacher can maintain any desired temperature.

Why not consider the *practical money-saving advantages* of Janitrol Unit Heaters for your requirements . . . whether for a new plant, a remodelled building or to replace an obsolete heating system that is costly to maintain and operate?

Write today for your copy of *Businessman's Blue Book of Better Heating*. It gives numerous examples of correct unit heater installation practices for many types of buildings.



Bruce F. Barnes, of the firm of Barnes and Snipes, architects, writes, "The reasons for considering your equipment included economy of installation and flexibility of handling the heating problem. Savings over other equipment approximate over 50%."

Janitrol
GAS-FIRED UNIT HEATERS

SURFACE COMBUSTION CORP. • COLUMBUS 16, OHIO

F. Kenneth Iverson, appointed chief metallurgist, Cannon-Muskegon Corp., Muskegon, Mich.

C. L. Thompson, appointed sales manager, Material Handling Div., The Buda Co., division of Allis-Chalmers Mfg. Co.

Joseph E. McLaughlin, named works manager, New Kensington operations, Aluminum Company of America, succeeding John L. Patterson, who has been named assistant general manager, Fabricating Div., Pittsburgh.

Thomas F. Morrow, appointed general manager of Defense Operations, Chrysler Corp., Detroit; **David B. Hinchman**, appointed comptroller, Automotive Body Div.; and **Howard W. Hunt**, becomes assistant comptroller.

H. L. Mills, promoted to assistant district sales manager, Chicago district sales office, Pittsburgh Steel Co., Pittsburgh.

Donald F. Stone, appointed sales manager, Phoenix Steel Supply, division of Phoenix Mfg. Co.

R. B. Grant, appointed Los Angeles branch manager, Minneapolis-Honeywell Regulator Co.

A. L. Coulson, appointed assistant sales manager, Ford Instrument Co., Div. of The Sperry Corp.

William C. Koltman, appointed assistant superintendent, Electric Furnace Dept., Midland Works, Crucible Steel Co. of America.

Emil J. McCauley, named superintendent, Hot Strip Mill, Cleveland Steel Plant, Republic Steel Corp.

Louis M. Hardnack, becomes plant superintendent and will be in charge of all phases of plant operations, The Paterson-Leitch Co., Cleveland.

Stephen J. Morris, appointed general purchasing agent Morse Chain Co.

High mold hardness—

Automatic Molding Machine Lowers Foundry Handling Costs

By W. G. Patton
Asst. Technical Editor

♦ Manual handling of bulky flasks and finished molds is eliminated by a fully automatic molding machine recently installed at Buick . . . The new unit produces V-8 engine block molds which are remarkably accurate and uniform . . . Exceptional mold hardness provides optimum surface finish for the transfer machining line.

♦ The new machine has a capacity of more than 200 half-molds per hour . . . A unique conveyor system, tied into the molding cycle, brings flasks into position automatically . . . Molds are carried safely away without bumping or damage.

♦ **AUTOMATIC CONTROL** of foundry traffic and elimination of heavy foundry work has moved forward another big step with the installation of a 4-station, fully automatic molding machine at a large automotive foundry. Built by Osborn Manufacturing Co., Cleveland, the new automatic molding machine is capable of producing in excess of 200 molds per hour. No manual effort is required except to clean the patterns and apply the parting agent.

The new installation has combined an unusually flexible and quickly responsive conveyor system with a 4-cycle rotary molding machine, interlocking the two together with limit switches and other protective devices. This has, for the first time, eliminated the following manual foundry operations: (1) moving heavy flasks into position, (2) filling the flasks with sand, (3) operating the jolt and squeeze machine, (4) drawing the pattern, (5) moving the completed mold onto conveyors. This entire sequence of molding operations is now carried out automatically for a major V-8 engine casting.

The unusual capacity of the new automatic

molding equipment is emphasized by recalling that the unit handles 60 tons of sand per hour when operating at top speed. In a 24-hr day, the new machine will handle—entirely automatically—1400 tons of sand. This is equivalent to 24 car loads.

The new molding machine occupies a space only 13 x 14 ft. Height of the unit is 9 ft.

Platens float on turntable

The molding machine operates on the rotary principle. At Station No. 1 the pattern is cleaned. At Station No. 2 the flask and pattern are accurately positioned and the flask is filled with a measured amount of sand. Station No. 3 is the jolt and squeeze station. At Station No. 4 the pattern is drawn and the mold and flask are discharged automatically onto conveyors. The pattern is also positioned for automatic return to Station No. 1.

Metal patterns are mounted on heavy cast alloy platens. The platens float on a turntable and are raised and lowered automatically to permit various operations to be performed. All stations

**"Patterns may be removed from
any of the turntable's four
stations in about 5 min. . . ."**

operate at the same time. A description of individual operations follows:

At Station No. 1, the make-ready station, an attendant cleans the pattern with compressed air. When necessary, a parting agent is sprayed on the metal pattern. After a predetermined dwell time, the pattern is indexed to Station No. 2.

At Station No. 2 a flask is automatically positioned below the sand supply bin and above the pattern. The platen carrying the pattern is then elevated to engage the flask, after which the bin gate opens and the flask is filled with a predetermined amount of sand. The platen, pattern, and loaded flask are then returned to engagement with the turntable.

Next, the turntable indexes the loaded flask to Station No. 3 where the flask is jolted a predetermined number of times at a rate of approximately 180 jolts per min. The mold is then squeezed to complete the ramming operation. Approximately 80,000 pounds of total pressure is applied to the molding sand during this operation. A very high mold hardness results, which is essential in holding the dimensional variation in the castings within the limits required by the modern high production machining procedures employed at the plant.

The rammed mold is next indexed to Station No. 4. During this movement, excess sand is automatically removed from the top of the mold. At Station No. 4, a pneumatic piston assembly strips the mold from the pattern and elevates the mold into engagement with a roller run-out device on which the completed mold is automatically discharged from the machine.

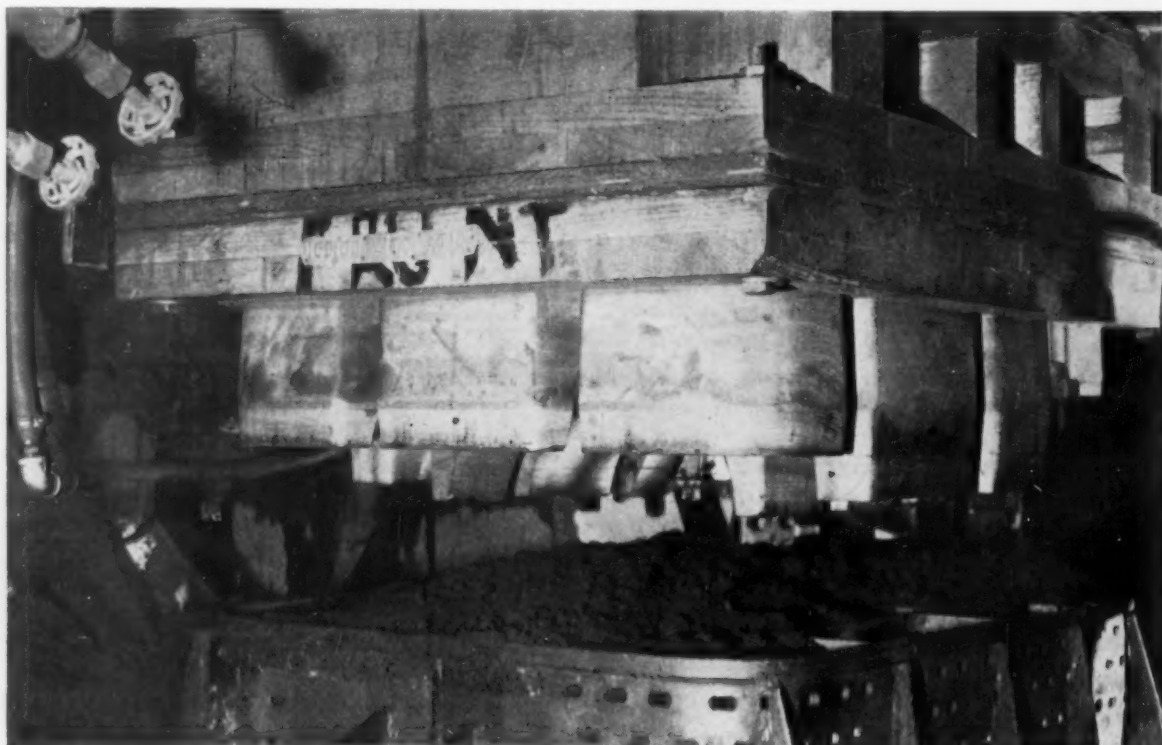
The above sequence covers the specific operation of making the mold. All operations at each station take place simultaneously; therefore, a finished half-mold is produced each time the turntable indexes.

As the completed half-mold leaves the machine, it is transferred by a powerized conveyor to a turnover machine which rotates the mold 180°. Thus the mold is turned face up in preparation for succeeding operations. After the turnover operation, the mold is transferred to a sectionally powered conveyor which takes it to a point suitable for discharge to the pouring conveyor.

The entire operation is controlled through drum switches which actuate solenoid valves. The speed of operation can be varied over a wide range. All circuits are interlocked with suitable limit switches to provide adequate safety for personnel and equipment.

A modified Geneva movement is used to drive the turntable between stations. This provides maximum speed and accuracy of positioning without shock to the mold.

Automatic turntable molding machines are used for making both cope and drag molds. It is possible, due to the unusual design, to change or remove a pattern at any of the four stations of



FLASK at Station 3 is ready for 80,000-lb squeeze to produce required mold hardness.

the machine turntable in approximately five min.

The power conveyor used to handle flasks and molds in the system is a vital part of the automatic molding operation. The conveyor is unique in both design and operation. It consists of suitably spaced rubber faced steel wheels mounted on axles which are independently drive in sections corresponding to the overall length of the mold plus clearance.

The drives for each section are so interlocked that the full storage capacity of the conveyor can be utilized in the event the main pouring line is held up for any reason. This avoids too tight a coupling of the automatic molding unit with the main pouring line and provides a greater stability of operation.

Another advantage of this method is that it eliminates any possibility of bumping molds against each other during the handling. This is an important consideration since the molds are quite delicate and must be handled carefully.

After leaving the rubber wheel conveyor, the molds are transferred automatically, to the main pouring line where they are skin dried, the cores are set, cope placed, and the completed mold poured.

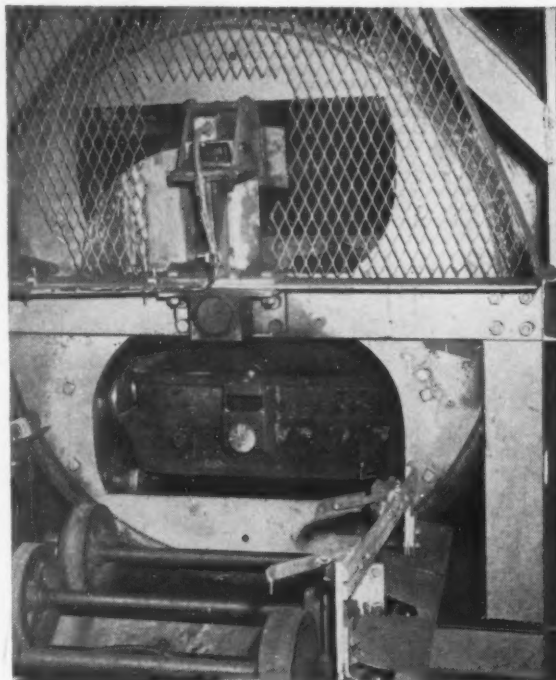
Cope and drag automatic mold units are identical; however, the handling equipment differs somewhat for the drag unit as compared to the cope.

Where spill sand is encountered it is removed from each molding unit to a spill sand conveyor by means of three small belt type conveyors.

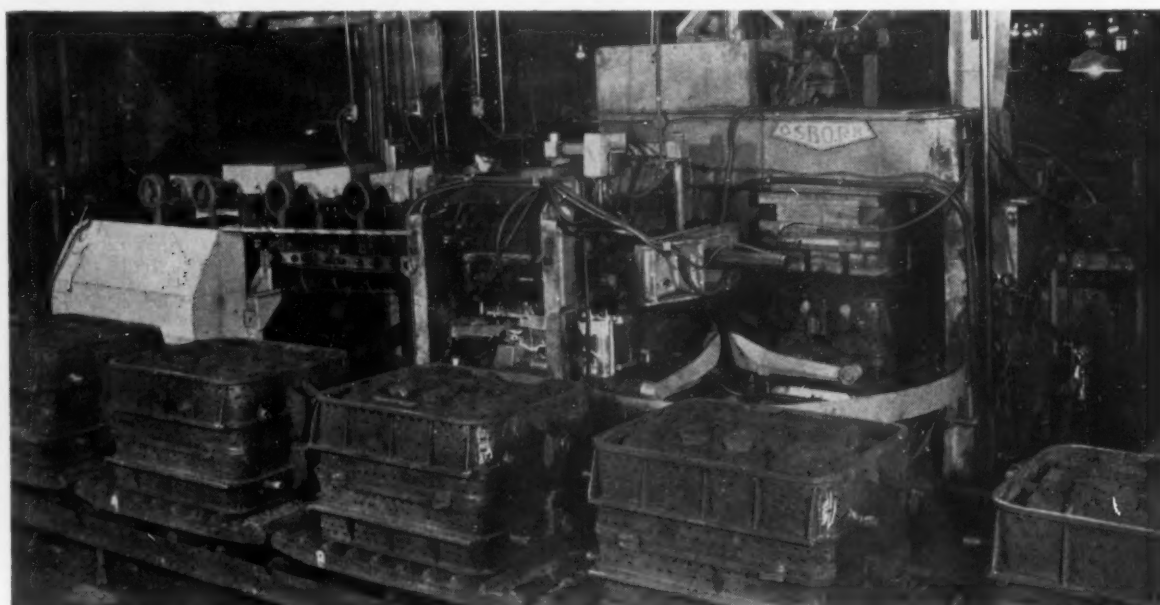
Operating experience during the past four months shows that a sustained high volume production of exceptionally hard and uniform V-8 engine block molds has been made possible by the new molding machines through elimination of heavy lifting and other manual effort.

BENEFITS OF AUTOMATIC MOLDING

1. Better mold uniformity.
2. Mold accuracy improved.
3. Mold hardness increased.
4. More molds per sq ft of space.
5. Minimum manual effort required.



POWERED conveyors carry completed half-molds to and from this drum-type turnover machine.



SQUEEZING and stripping stations of new machine (rear) prepare molds for pouring line.

Standard sizes—

Portable Plug-In Elements Heat Magnesium

By R. W. Peters, Superintendent of Tool Engineering, Convair Div. General Dynamics Corp., San Diego, Calif.

♦ Hot forming magnesium calls for close heat control on dies and alloy material . . . Gas burners, torches, oil baths and resistance heating elements offer a choice to fabricators . . . To cut costs and gain more efficiency and safety, one firm is switching to rod-type resistance heaters wherever possible.

♦ Rods of various standard lengths are kept in a portable storage unit, wheeled around the plant on call . . . Dies and forming blocks are pre-drilled to accommodate heating rods . . . Machine operators simply connect the right rods, cords and plugs from the portable storage rig and fast heating gets underway.

♦ SUCCESSFUL hot forming of magnesium alloys depends to a great extent on controlled heating of dies and forming blocks, as well as the alloy material itself. Gas, electrical and fluid heating methods have all proved practical for these purposes.

Where various hot forming techniques and types of machinery are used, the fabricator will probably show a preference for one of these heating methods, especially if the heating equipment can be standardized for maximum general purpose use.

At Convair's San Diego Div., rod-type electrical resistance heating units are being applied as a standard wherever possible. Such elements get the first call for heating drop hammer dies, press brake dies, stretch forms and steel form dies.

The firm's experience with this die heating method indicates greater production efficiency, reduced costs, better safety, constant uniform heat and ease of electrical equipment handling. To expand the use of the system at still lower cost, a portable setup was designed to permit using a limited number of resistance heating units for a great many operations.

The portable rig is a wooden, box-type storage unit mounted on casters, with an electrical panel at one end. Calrod heating elements from 14 to 31 in. long are stored in the box, together with necessary electrical cord, plugs, etc.

This convenient supply setup can be quickly moved to heat dies as the need arises in the drop hammer, stretch forming and press brake forming departments. A system for color coding

all possible electrical hookups prevents overloading the plant electrical system.

Wherever resistance heating is considered practical for a hot forming operation, dies and forming blocks are designed accordingly. Hole locations are specified and predrilled to accommodate heating element rods. Other design features provide proper locations for such accessories as thermostats, insulation, etc.

Magnesium alloys at Convair are hot formed in steel, aluminum and Kirksite dies. Elevated temperature die design must also consider differences in thermal expansion between these die materials and the alloys to be fabricated.

Preheat sheet for forming

Drop hammer dies are usually preheated in special ovens. Correct rod type heaters are chosen from the portable storage setup, and the ovens speed the initial heating. No heat is lost to adjacent press areas as would be the case if dies were brought to operating temperature while on the press. When heated dies are transferred to drop hammers, the resistance units maintain required operating temperatures.

Ovens also heat magnesium alloy sheet material to proper forming temperature. Some of these ovens are gas fired, but care must be taken to see that gas flames do not touch the alloy sheets. Where the portable heating setup is used, resistance rods furnish the necessary oven heat.

For heating some drawing and forming dies where the resistance element system is not feasible, gas burners are used as an alternate

Hot Forming Dies

method. Burners are made from standard $\frac{3}{4}$ -in. pipe bent to conform to a die shape, and No. 40 (0.098 in.) holes are drilled at $\frac{1}{2}$ -in. intervals.

These burner "rings" are positioned about $\frac{5}{8}$ in. away from the die surfaces to be heated. Extra care must be taken to position the burners so that the gas flame does not strike the magnesium alloy sheet during the forming or drawing operation.

Gas burners must be thermostatically controlled to maintain proper operating temperatures in dies and forming blocks. Thermocouples placed near the die surface work through automatic pyrometers to control the air-gas mixture supplied to the burners. For each burner setup, a pilot light is located adjacent to the burner "ring."

Heating by the use of forced air and gas torches is another method sometimes used to build up and maintain proper hot-forming die temperatures. With this system, die temperatures are usually held to 300°F, although occasionally the method will be used for dies required to work at 500°F.

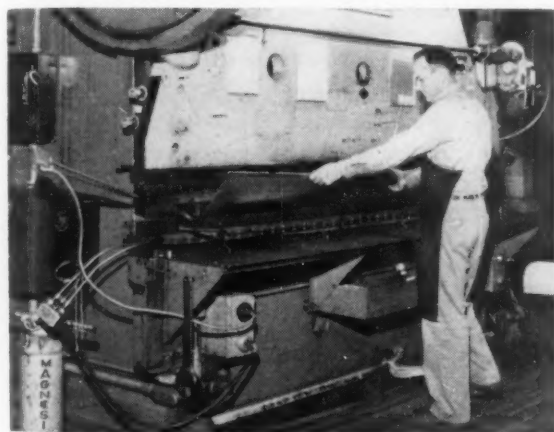
There are several objections to increased use of the torch heating method. Torches create a safety hazard and it is also difficult to maintain positive and uniform heat control in the dies. It is possible that an accidentally misdirected torch flame may damage forming tools and accessory equipment.

A hot oil bath is the simplest heating method to use for joggles or simple bends. High-frequency electric heating was tried for this type of hot forming, but was discontinued in favor of a simple hot oil tank. Parts to be joggled are handled in and out of the bath in a minimum of time and are promptly formed on two nearby punch presses.

Convair's careful attention to efficient controlled heating is dictated by the need to retain maximum mechanical properties in the hot-formed magnesium alloys. Optimum temperature range is 300° to 350°F for hot forming material supplied in an original "hard" condition. When formed in the proper temperature range, these alloys lose only about 5 pct of original strength and hardness as they cool to room temperature.

If forming heat is carried as high as 600°F, the "hard" alloys will lose their original mechanical properties and revert to a soft condition. This initial strength and hardness cannot be recovered; even cold working will only restore the values to a slight degree.

But a temperature as high as 600°F may be used to hot form magnesium furnished in the "soft" or annealed condition. Inherent strength properties are not affected by working in or cooling from this temperature. Normally, dies used to hot form this as-annealed material are maintained at 550°F.



HOT-FORMING press brake has leads and connections to die heating elements at both sides.



ROD-TYPE resistance heating elements are inserted in holes of this hot-forming die.

Eliminate sludge—

Phosphorized Anodes Produce Smoother, Heavier Copper Plate

♦ Anodes of commercial copper, containing 0.02 to 0.03 pct phosphorus, possess superior plating characteristics . . . They provide freedom from anode sludge without the need for bags or diaphragms . . . Deposits are exceptionally smooth and any desired thickness can be obtained . . . Corrosion of the anode is uniform.

♦ Nearly 100 pct of the copper from the anode is deposited on the cathode . . . Plating solution remains clear for long periods of time, reducing maintenance cost appreciably . . . Anode scrap loss is extremely low . . . Because of their characteristics, these anodes are particularly suited for electrotyping and electroforming.

By R. P. Nevers R. L. Hungerford E. W. Palmer

Research Chemists
Technical Dept.
The American Brass Co.
Waterbury, Conn.

♦ CONTRARY to common belief that copper of extremely high purity makes the best anodes for acid-copper plating, better anode characteristics can be obtained with copper containing small amounts of certain additives.

A perplexing and annoying problem in acid-copper electroplating is the formation, during electrolysis, of anode sludge, consisting of tiny particles of copper. These particles are carried by the electrolyte to the cathode surface where some adhere, resulting in irregular growth and rough surface deposit.

This condition often limits the thickness of deposit which can be acceptably produced. The problem is not too important where flash coatings are involved but is serious in electrotyping and electroforming.

The improved anode coppers do not form sludge during electrolysis. The solution remains clear and smooth deposits of any desired thickness can be obtained. Buildup of copper in the solution is also avoided. Absence of sludge and

smooth corrosion of the new anode indicates that nearly 100 pct of the copper removed from the anode is deposited. This compares with as little as 85 pct using tough pitch copper anodes.

Two explanations are given for the formation of metallic particles in an electrolyte. The first is based on the presence in the anodic area of cuprous salts which become oxidized to the cupric form and in a reaction in which metallic copper is formed. Another explanation^{2,3} is that very small crystal fragments are freed from the anode during electrolysis by preferential attack at grain boundaries.

A common method of preventing migration of anode sludge particles to the cathode surface is to envelope the anode with a linen, fine canvas or glass cloth bag. This arrangement helps but is seldom entirely satisfactory. First, it involves time and expense. Also, the bag interferes with circulation of the electrolyte, causing uneven corrosion of the anode and resulting in high scrap losses.

When a copper anode contains small amounts of certain additive elements, it becomes coated during electrolysis with a dark brown to black surface film, and metallic particle formation is completely suppressed. Thick cathode deposits, without growth of nodules, form when either phosphorus or arsenic is present in the anode in amounts greater than 0.005 pct.

Anodes develop heavy coating

Tests were made using a number of commercial grades of copper together with high-purity copper containing controlled amounts of various addition elements. These coppers were chiefly in the wrought form. In all tests using high-purity anodes, such as cathode or electrolytic tough pitch copper, the anodes soon developed a heavy coating consisting chiefly of fine copper particles.

This coating was very loosely adherent and aggregates of fine particles continually became detached, causing turbidity and forming layers of sediment. Any movement of the anode dislodged more material. On withdrawing an anode from the bath, clouds of copper particles slid off into the electrolyte.

Measurements of the weight gain at the cathode and weight loss at the anode show that as little as 85 pct of the copper removed from high-purity anodes is plated onto the cathodes. The remainder is found partly as copper particles in the anode sludge and partly as increased copper sulfate in the plating bath. The dissolving power of the bath increases with agitation and aeration.

A relatively impure commercial fire-refined copper performs anodically quite differently from the high-purity coppers. It becomes coated in the early stages of plating with a dark gelatinous film which is fairly adherent, but does tend to slide off as the anode is lifted out.

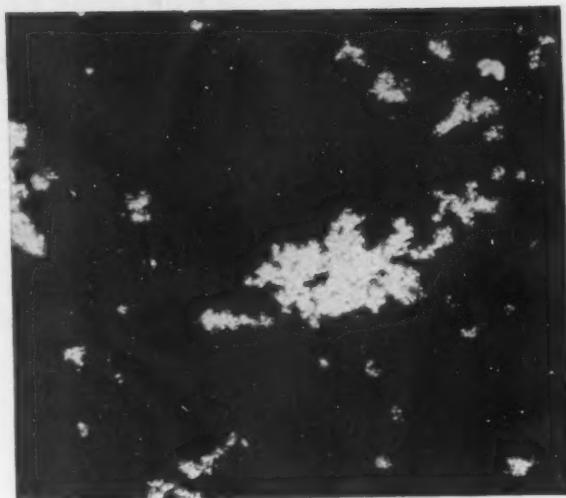
Baths using these copper anodes are far less turbid and are almost free from wandering, fine copper particles. These characteristics account for the fact that cathode deposits from such anodes are definitely smoother than those from high-purity anodes and greater thicknesses of deposit are practical.

Cathode deposits from these relatively impure, film-forming, fire-refined anodes may average in weight as high as 98 pct of the weight loss of the anodes. There is practically no anode sludge, and consequently no appreciable buildup of copper in the solution.

Investigation shows that arsenic is the element chiefly responsible for the desirable characteristics of the anode film, although selenium, tellurium, and silver also aid in its development.

There are some drawbacks in using anodes of fire-refined copper and are not subject to control and vary in amount, even in copper from the same source. Also, there is relatively little fire-refined copper on the market. In addition, fire-refined copper anodes do not corrode as uniformly as might be desired.

Wrought anodes made from high-purity cop-



HIGH-PURITY copper anodes form sludge (500X) which is deposited on cathode, resulting in irregular growth and rough plated surfaces.

per to which phosphorus has been added in suitable amounts (more than is necessary to de-oxidize the copper) closely approach ideal behavior in acid-copper plating. Such anodes, containing 0.02 to 0.03 pct phosphorus, become coated during plating with a very thin, black film which has a surprising degree of adherence. There is no formation of copper particles during plating and the bath is as clear after prolonged use as when first started.

The film is not disturbed by pulling the anode out of the bath, and is so thin that no anode cleaning is necessary. The film does not add resistance to the circuit and no additional voltage is required. Phosphorized copper anodes corrode uniformly and evenly, with remarkably smooth surfaces as compared with the rough, uneven,

COPPER ANODE BEHAVIOR COMPARED

	Electrolytic Tough Pitch Copper		Fire-Refined Copper	Phosphorized Copper
	Aerated	Not Aerated	Aerated	Aerated
Anode Loss, grams	249.52	249.36	217.18	215.54
Cathode Gain, grams	213.38	213.74	213.03	212.91
Sludge or Film, grams	18.02	35.30	0.53	0.19*
Total Copper in Sludge or Film, grams	16.99	33.96	0.33	0.09*
Initial Copper in Electrolyte, grams	311.11	309.93	311.34	310.34
Final Copper in Electrolyte, grams	330.07	311.92	315.49	313.81
Distribution of Copper as Per Cent of Anode Loss:				
Cathode Deposit	85.51	85.76	98.09	98.78
Sludge or Film	6.81	13.61	0.15	0.04
Electrolyte Gain	7.60	0.80	1.91	1.60

* Phosphorized copper forms no sludge, but only an adherent, non-metallic anode film. Electrolytic tough pitch copper forms actual sludge.

"Anodes with 0.005 pct phosphorus scarcely differed from electrolytic tough pitch copper in sludge forming propensity . . ."

undercut surfaces usually observed on highly-purity copper and even on fire-refined copper.

The percentage of anode loss recovered on the cathode when phosphorus-bearing anodes are used is even greater than that obtained from fire-refined anodes. The remainder of the anode loss anodes is found in the black film envelope and in the electrolyte.

Phosphorus in excess of the amount necessary for deoxidation is required to bring about the desired advantages. Anodes containing less than 0.005 pct phosphorus definitely scarcely differed from electrolytic tough pitch copper in sludge-forming propensity. Anodes containing as much as 0.04 pct phosphorus formed a good film, free from any trace of sludge, and the cathode deposit was of excellent quality. Higher phosphorus contents are believed to give equally good anode behavior, but offer no advantage.

Experiments with phosphorized copper made from very high purity copper show that such coppers are consistently slightly inferior in anode characteristics to commercial coppers. Certain elements in very small amounts commonly present in commercial coppers, but practically absent in the very high-purity copper, have some importance in determining anode behavior. Most important of these elements are silver, tellurium and selenium.

Copper anodes containing other deoxidants for copper, such as silicon, calcium, cerium, and boron, in excess of the amount required for deoxidation, sludged badly in use, indicating that the desirable anode characteristics are imparted by the phosphorus and are not associated with the removal of oxides.

Grain size has been considered important in determining anode characteristics. Fine-grained anodes were expected to give better deposits. Plating was done using rolled anodes of high-purity copper and phosphorized copper which had been annealed at a series of temperatures to obtain gradation in grain size. No appreciable differences, at anode or cathode, were noted.

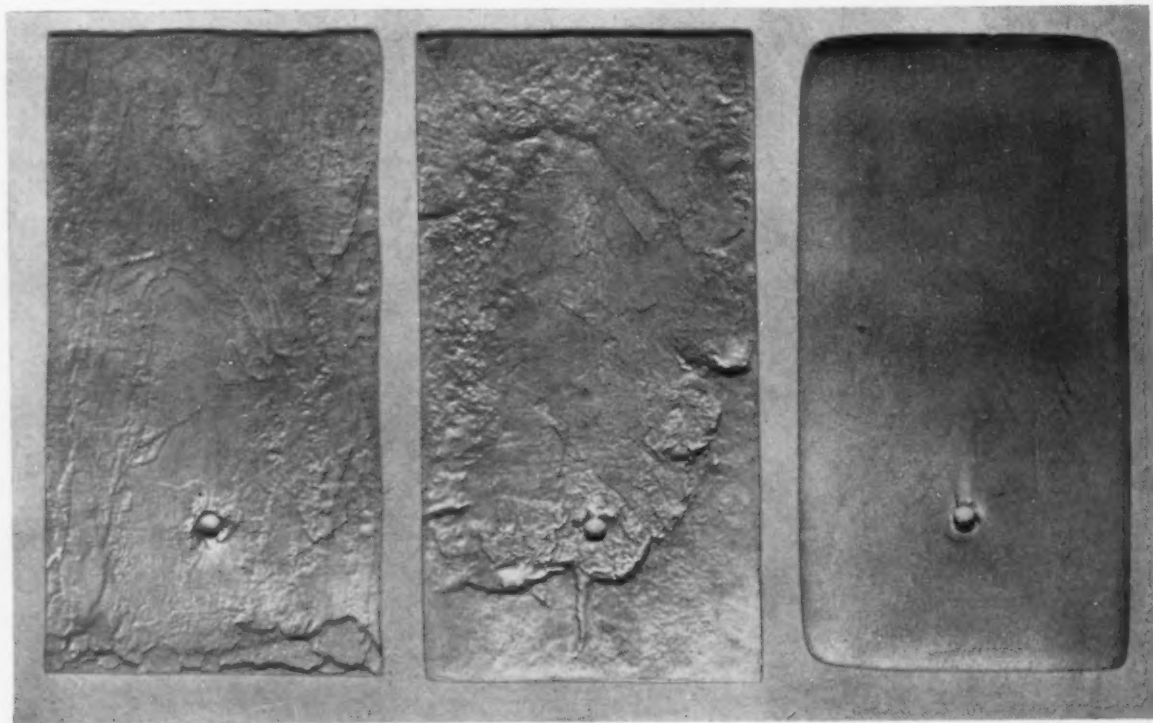
ACKNOWLEDGMENTS

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- ² Modern Electroplating, W. E. Hughes, p. 120.
- ³ Metal Industry, E. R. Thews, 71, 126, Aug. 15, 1947.

Information in this article was presented at the American Electroplaters' Society Convention held in New York, July 12-15, 1954.



COMPARISON of phosphorized copper anode (left) with fire-refined (center) and electrolytic

tough pitch copper (right) anodes shows the uniformity of corrosion of new anode.

Profit makers—

Nondestructive Tests Check Forging Quality, Spot Equipment Troubles

♦ Quality control through nondestructive testing in a steel forging plant can be an important means of boosting profits through savings . . . Frequent magnetic particle inspections during the forging process pay off by nipping costly troubles in a hurry . . . Even at high production rates, defective lots are kept small.

♦ Nondestructive testing saves good forgings, spots salvageable defects quickly . . . It can be used profitably at every forging step from billet stock to the heat treated part . . . Same test method can be applied to highly stressed parts in forge plant equipment, will prevent fatigue cracks from causing major shutdowns for repairs.

By S. C. Totaro
Chief Inspector
General Drop Forge Corp.
Buffalo

♦ **NONDESTRUCTIVE** tests on steel forgings are fast, accurate and a valuable guide to plant savings. Where quality must be maintained during rapid production, frequent test checks break long runs into small control groups. Defects are noticed promptly and corrective measures taken before scrap losses become excessive.

Specific tests for quality and cost control are effectively integrated with each production stage at General Drop Forge Corp., Buffalo. The firm forges automotive, aircraft and Ordnance parts from carbon and alloy steels. Plant facilities include a tool and die shop, a shear and saw department, complete upsetting and forging equipment, and heat treating and inspection departments.

Hourly checks on part quality tip off the presence of defects, possible die troubles or operator carelessness and indicate where 100 pct inspection is needed. Success with magnetic particles inspection in particular has also led to the use of this technique for preventive maintenance on shop equipment subject to fatigue cracking.

Check for faulty billets first

Inspection control of forging operations begins with the billet or bar stock. Seams are typical of billet defects occasionally carried over from the original ingots. Sometimes these may be located by visual examination, but magnetic particle inspection is often used at this control point. Faulty billet stock rejected before the heating or forging cycle starts will effectively conserve production time.

Perhaps nondestructive testing and inspection



MAGNAGLO unit uses black light, fluorescent magnetic particles to spot forging defects.

During the run, from three to five forgings are checked directly from the hammer each hour . . . No cleaning or trimming is required and the test spots a flaw in less than a minute.

pay their greatest dividends by helping to establish correct procedure for a new hammer forging job. The first forgings from such a setup are thoroughly inspected for die alignment, finish, unfilled sections, dimensions, weight, etc., and necessary corrections made until sound forgings can be made in production quantities.

During a production run, the firm inspects three to five forgings directly from the hammer each hour. At production rates up to 400 forgings per hour, this periodic check on the process, die condition and operator efficiency means definite economies. Inspection consists of dimensional and visual checks plus the Magnaglo test: Since forgings can be Magnaglo inspected directly off the hammer without cleaning or trimming, the test will spot a flaw in less than a minute.

Keep a running check

With carbon steel, quenching the forging will usually pop the scale to provide a clean surface. Should the periodic inspection locate defects which were not evident an hour previously, all forgings produced during this period would be screened 100 pct. This system prevents waste of time in forging and succeeding operations at minimum inspection cost.

A Magnaglo sampling inspection also con-

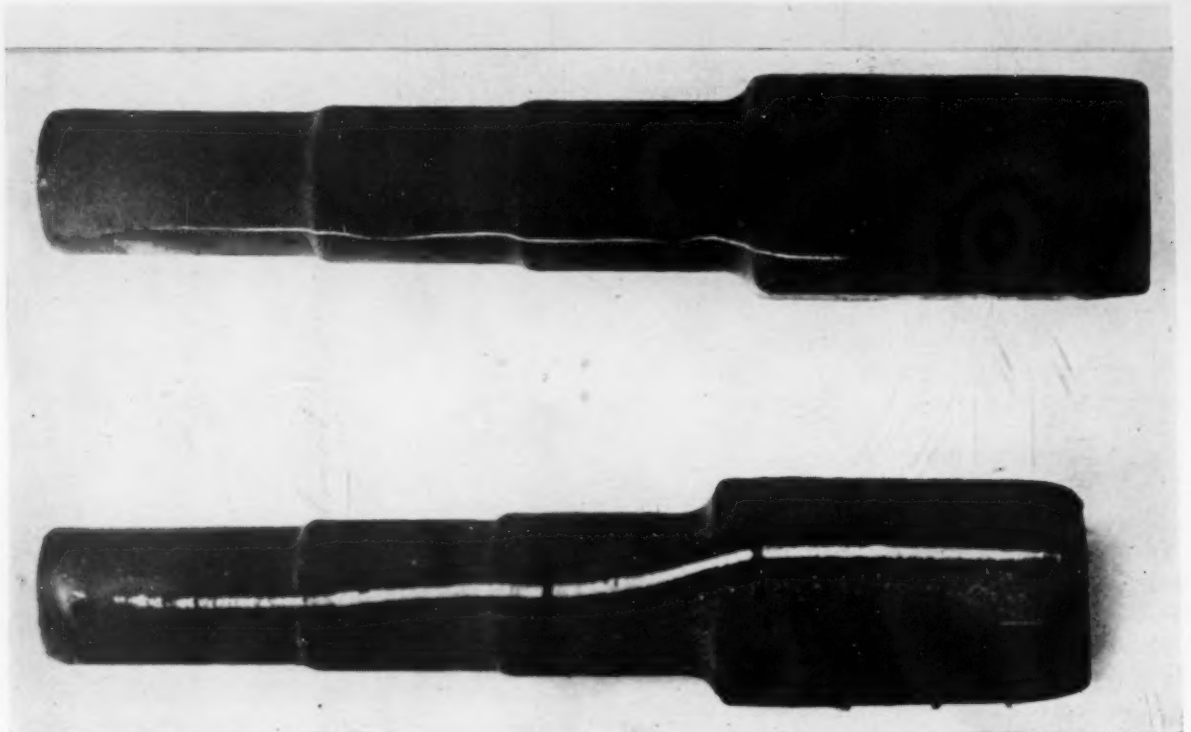
trols trimming and heat treatment operations. The first tests establish correct procedure for each machine or process. Then in production, periodic inspection indicates when corrective measures are necessary.

As in the hourly forging inspection, frequent correction as required keeps trimming and heat treating scrap to a minimum. Defective lots can be screened by 100 pct inspection or rejected offhand if it is apparent that something is seriously wrong.

Like most forging plants, the firm is set up to do cold inspection after pickling, shot blasting, or other cleaning methods. These tests may consist of visual examination, dimensional and weight checks and partial or 100 pct Magnaglo inspection as required. They permit salvaging of many forgings that show only minor imperfections.

Because of rigid process control, the company expects very little rejection at this final inspection point. Forgings passing the Magnaglo test are demagnetized for shipment. Salvageable defects are clearly marked for attention.

Grinding is the chief salvage method, and each grinder operator has a container of dry magnetic particles for progressive checking. Since the forgings are still in the magnetized condition, the operator dusts them frequently



UPSET FORGINGS show defective seams outlined by magnetic particles in quick inspection.



FATIGUE CRACK in a press crankshaft was revealed in routine preventive maintenance check.

with the particles to note when the imperfection is removed. This keeps unnecessary grinding at a minimum.

Magnetic particle inspection methods are also used effectively in a planned program of preventive maintenance for plant equipment. Dies, forging hammers, presses, and other items of plant equipment have highly stressed components or sections subject to fatigue failure.

Minute cracks in service equipment frequently grow to the point of failure. By locating fatigue cracks early and repairing or replacing parts during a planned overhaul, downtime is minimized.

General Drop Forge attempts to predict the

expected life of important equipment parts so that repair or rebuilding can be scheduled in time to prevent failure. Even fork lifts on the firm's industrial trucks are inspected and repaired during production lulls.

In addition to detecting inefficient setups and mechanical defects, magnetic particle inspection is also used to indicate the presence of nonmetallic inclusions. This is especially important in steel aircraft forgings. Certain standards rate these as to number, length, and distribution per sample, or per unit of area. One such standard is ASTM, E-45-42T, "A tentative recommended Practice for Determining the Inclusion Content of Steel."

In steel forgings

TREPPANNING

Cuts Hole Making Costs

By A. G. Haglund

Works Manager
Axelson Mfg. Co. Div.
Pressed Steel Car Co., Inc.
Los Angeles

◆ TREPPANNING attachments on standard heavy duty lathes have eliminated slow, costly drilling operations on more than 20 heavy forgings produced at two Los Angeles plants of The Axelson Mfg. Co. Div., Pressed Steel Car Co., Inc. Where former drilling techniques generated quantities of chips, the trepanning tools produce solid metal cores which are used to make many other parts.

There was ample incentive for the firm to adapt an efficient trepanning attachment to its Axelson heavy duty lathes. Many of the company's forgings required large, deep holes in heavy sections. Standard practice before the switch to trepanning was to sink heavy drills prior to rough and finish boring.

This heavy drilling was slow going and involved expensive nonproductive time for drill sharpening and maintenance. The large quantities of drill chips produced were just so much scrap.

First successful application of a trepanning attachment to the firm's lathes was soon followed by others. Several units now in everyday use account for large savings in machine time and material recovery. Trepanning cores ranging from 1 3/16 to 5 7/8 in. in diam, and up to 35 1/2-in. long are stocked to make machine shafts, collars, gears, and oil well and aircraft parts.

One such trepanning setup has cut floor to

◆ Drilling wide, deep holes in steel forgings is slow, costly work . . . This firm slashed hole making time and costs on more than 20 parts by putting trepanning attachments on standard heavy duty lathes . . . As a bonus, trepanning creates a usable core of metal instead of masses of drill chips.

◆ Prime example of trepanning efficiency involves putting a hole 6 in. wide by 32 1/2 in. deep in a solid steel forging . . . Old method of drilling and finish boring took 30.6 hr . . . New system makes two trepanning cuts and a finish bore in just 8.6 hr . . . Cores are used to make shafts, collars, gears, other miscellaneous parts.

floor time 280 pct in machining a steel forging to make the barrel of an aircraft landing gear strut. The job requires forming an accurate flat-bottomed hole, 6 in. in diam and 32 1/2 in. deep in the solid stock of this 277-lb forging.

Previous practice, before adopting the trepanning technique, had been to drill the hole, then finish bore it. Drilling created a 4 3/8 in. diam, 32 1/2-in. deep hole in an average time of 8.4 hours. Boring the drilled hole to final 6 in. diam and forming a flat bottom took another 22.2 hours average, including setup time. Total average floor to floor time for this obsolete method was 30.6 hours.

Two trepanning operations, followed by a final boring, have now cut overall machining time on this strut barrel to an average of 8.62 hours. The 21.98 hour saving accounts for the 280 pct time gain, with a bonus in the form of usable core stock instead of drill chips.

The first trepanning cut produces the core while cutting a hole 3 7/8 in. in diam and 32 1/2 in. deep. Workpiece is revolved at 214 rpm on the 25-in. heavy duty lathe. Feed is 0.006 ipr. Actual cutting time is 25.3 minutes.

A second trepanning expands the hole to a 5 7/8 in. diam throughout its length. The workpiece is rotated at 108 rpm while the feed remains at 0.006 ipr. This cut is made in 50 minutes.

Finish boring the strut barrel to a 6 in. diam

STRUT barrel before trepanning (left) and after (center). Core (right) makes other parts.



and forming a flat bottom in the hole takes approximately 4.82 hours.

The trepanning attachment used on this job is mounted on the lathe carriage after first removing the compound slide. This assembly holds the trepanning bar and serves to feed the bar into the work. A sleeve attached to the end of the workpiece rotates within a steady rest to provide added support for the trepanning bar and also to guide the single or double-bladed trepanning tool into the work. A second steady rest provides added support for the outer end of the workpiece.

Copper shoes protect surface

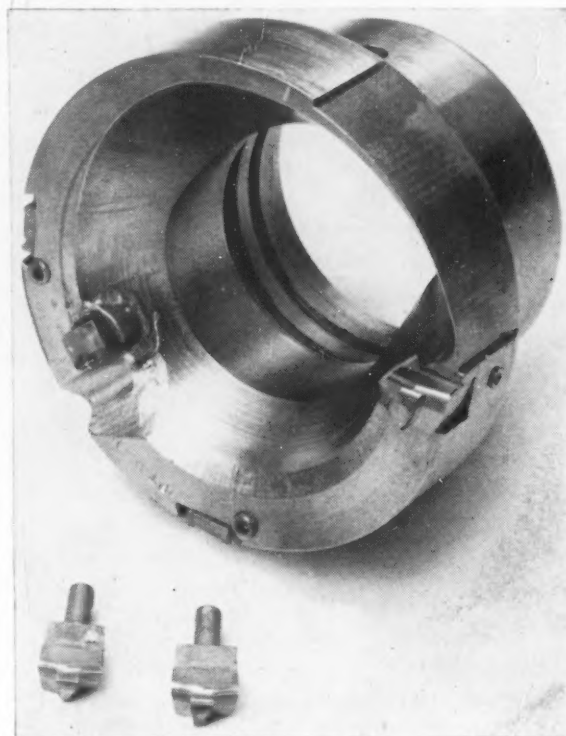
Work is chucked in a standard four-jaw chuck equipped with copper shoes to protect the previously machined outer surface. Prior to chucking and trepanning, struts are drilled and undercut at the chuck end so that the core will come free when the trepanning bar is withdrawn.

The trepanning head for this job is threaded to the end of the hollow bar and holds two removable, Carbide-tipped cutters. These are ground to break chips into small pieces, and set so that the width of cut gives proper clearance for coolant flow and chip removal. Grooves in the trepanning head also aid coolant and chip flow. Two removable carbide wear strips guide the head in the finished part of the bore. The threaded head can be replaced with a special boring head if desired.

A soluble oil coolant, flowing at 130 gpm and under 150 to 180 lb pressure, is directed through the rotating sleeve to the cutting head. The pressure flow helps to break up chips and carry them out through the hollow trepanning bar.

Mixing one part of coolant to 12 parts of water gives the cutting fluid better lubricating properties. A curved chute at the end of the trepanning bar directs chips and coolant into the machine pan.

An operator needs no special skill or training to trepan with this lathe attachment. Setup is simple and requires very little time.



TREPANNING head has Carbide-tipped cutters, coolant grooves, set screws for guide bars.

Powder Processes Solve

♦ Introduction of iron powder into the reaction zone of an oxyacetylene flame speeds metal removal in many jobs difficult or impossible by other methods . . . Powder washing, for example, is a fast, effective method of removing sand inclusions, penetrations and burned core sand from steel castings . . . Metal can be washed away at the rate of more than 2 lb per minute.

♦ Powder lancing also drastically cuts down the time required for piercing tough materials such as iron and steel containing inclusions, and for cutting reinforced concrete, slag, firebrick, cinder block, aluminum billets and other materials . . . In some cases, only one-sixth the time and material is used for powder lancing compared to oxygen lancing.

By R. S. Babcock

Laboratory Div. Head
Cutting & Scarfing Processes
Linde Air Products Co. New York

Part III

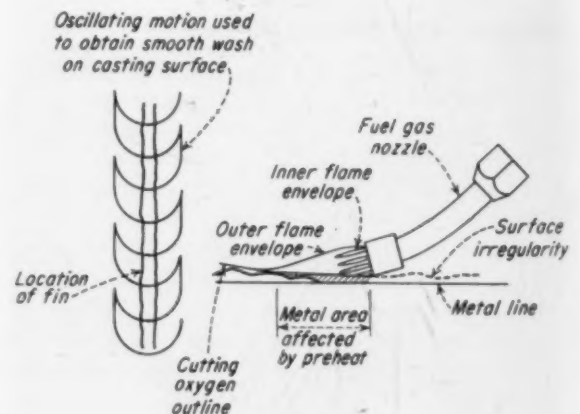
♦ POWDER WASHING combines the advantages of the powder processes with those of oxygen gouging. This combination provides an effective method of washing out sand inclusions, penetrations and burned core sand from steel castings. It is a particularly useful process for doing the tough cleaning jobs on castings.

Apparatus for powder washing has high preheat capacity and low oxygen velocity, permitting removal of metal from wide areas with accurate control. The in-line blowpipe head uses a gouging-type nozzle with preheat orifices completely encircling the oxygen orifice. Metal can be removed from castings at the rate of more than 2 lb per minute.

The technique for powder washing differs from scarfing or gouging in that the nozzle is oscillated slowly across the area to be removed. The operation is easily controlled by the speed with which the blowpipe is oscillated, angle of the oxygen stream, and the oxygen pressure used. The nozzle is held at about a 20° to 25° angle to the work surface. The tip should be from 1½ to 2 in. from the reaction zone.

Fin removal by conventional oxyacetylene cutting, scarfing or grooving techniques is frequently difficult or impossible because adhering mold sand insulates the metal at the base of the fin. Powder washing eliminates this difficulty and permits blending of the casting surface to a smooth finish.

Fins consist of thin ridge-type projections



SKETCH illustrates techniques for fin removal by powder washing. An average operator can obtain uniform, well-blended surfaces.

Tough Metal Removal Problems

formed at the parting lines between the mold sections. They range from $1/16$ to $1/4$ in. thick and have a small radius where they join the casting. In removing the fin by washing at its base, the remainder of the fin which is thinner is melted or burned away rapidly. Using an oscillating technique, the casting surface is easily finished to a uniform contour.

In pad washing, the blowpipe is oscillated more slowly than in fin removal. Pads up to 6 in. wide and $3/8$ in. thick can be removed in one pass. If additional passes are required for wider pads each pass is blended into the preceding pass by overlapping so that a smooth surface is obtained.

Each pass is started by holding the blowpipe at about a 45° angle to the work surface. Once washing action starts, the angle is changed to about 20° or 30° . An average operator can blend the casting surface so that it is difficult to detect where a riser was previously attached.

Powder washing is particularly applicable to the removal of sand inclusions from castings.

Chipping is slow, tedious work because chisels dull quickly and require frequent resharpener. In powder washing, sand inclusions show up readily as spots which differ in light intensity. Powder washing is not only a faster method for removing sand inclusions, but the molten iron oxide helps to float out the sand particles.

In removing sand inclusions, the oxygen lever should be barely cracked so that the defective area may be washed out without digging into the casting surface. The reaction of the powder washes out the fused sand and the low-velocity oxygen stream blows away the slag, leaving a well blended surface.

Remove sand particles from steel

Penetrations are another source of difficulty in cleaning castings. Being a bulge of sand particles in a matrix of steel, a penetration is difficult to remove by chipping or grinding. Previously, if penetrations were extensive, it was often more economical to scrap or remelt the



POWDER WASHING is an efficient, low-cost way of cleaning steel castings. Here the operator removes riser pad from between flanges.



POWDER LANCING saves both time and material on tough piercing jobs. Even reinforced concrete slabs can be pierced quickly.

The powder lance combines advantages of the oxygen lance and of the powder processes.

casting. Powder washing permits this type of cleaning to be done quickly and economically.

Chill bars and rods, reinforcing nails and core chaplets must also be removed during cleaning. The bars and rods are used to prevent cracking in critical areas when the casting is solidifying. When these bars and rods are difficult to remove by other means, they can be removed by powder washing without damaging the casting.

Powder washing is also used to remove cracks or tears from castings, and to wash off weld reinforcement when castings have been repaired. It is particularly advantageous where large castings cannot be moved easily to the cleaning area. In such cases, it can relieve or eliminate bottle-necks on the cleaning floor.

The time saved by powder washing is usually substantial. For example, in cleaning a heavy mining machine casting which previously took 1 hour by grinding, only 5 minutes was required by powder washing. In another case, a casting which required 4 to 6 hours cleaning time by grinding was powder washed in 1 hour.

Some foundries use the process only for removing burnt cores. On one casting which could not be cleaned by other methods, a 1/2-in. thick layer of sand was removed from the 12-in. ID of a 6-ft hydraulic cylinder in less than 2 hours.

The powder lance is a more recent development which combines the features of the deep-penetrating oxygen lance and the advantages of the powder processes. Thus, many ferrous and nonferrous materials which are difficult or impossible to pierce with an oxygen lance can be pierced with the powder lance.

Melts and oxidizes the material

The action of the powder lance is that of melting and oxidizing the material rather than spalling. Among the materials being pierced are iron and steel containing inclusions, reinforced concrete, slag, firebrick, cinder block and aluminum billets.

The powder lance has two quick-acting valves, one for oxygen and the other for powder, which operate from the same lever. The front end of the lance has a special fitting to replace pipe quickly. The lance must be used with a powder dispenser capable of withstanding air pressure up to 100 psi. In lancing, iron powder gives satisfactory results, but a mixture of 70 pct iron powder with 30 pct aluminum powder by weight gives the best results and permits faster operation.

Most applications for powder lancing have been in foundries and steel mills. In blast furnaces, the powder lance is used to remove damaged tuyeres and bosh plates. The bosh plates

are hollow plates containing water pipes for cooling and protecting the bosh brickwork. Being in a furnace zone of most intense heat, the bosh plates have a tendency to freeze in place, making them extremely difficult to remove for replacement.

In one case, one of two such bosh plates was removed by pulling with a 30-ton jack. This took 4 hours. The second plate was first cut in two with a powder lance in 1 hour 5 minutes, then easily removed with a hoist jack. Cutting with a conventional oxygen lance had taken anywhere from 3 to 9 hours per plate on previous occasions.

In cutting the bosh plate, a hole was started at the center of the plate, then enlarged to 4 x 6 in. so that the operator could see the inside of the plate. A cut about 1 1/2 in. wide was then made from the inside along the roof and carried through to the inside of the furnace. Another such cut was made at the bottom to part the plate.

Salamander removal simplified

The powder lance is also used for cold break-up of blast furnace salamanders as well as for liquid tapping. The latter method is a more recent development superior to cold break-up. It consists of piercing a hole through the furnace lining at the base height of the molten salamander, then tapping the salamander off in the liquid state. This method not only saves in the cost of salamander removal, but substantially reduces the cooling-down time and permits repairs to be started much sooner.

The economy of powder lancing is equal to that of the other powder processes. For example, after a prolonged steel mill shutdown the plugged tap hole in a blast furnace is usually difficult to open. On several furnaces, powder lancing did the job in about 30 minutes. Previously, drilling and piercing with an oxygen lance has taken 10 to 12 hours. The longest time on record to open an extremely resistant tap hole plug was only 2 hours by powder lancing.

Another example is that of tapping a molten salamander from a blast furnace by piercing a 4-in. hole through 15 ft of concrete, refractory, slag and cinder in 26 min. About 325 tons of molten pig iron and slag were then drained through the hole. The operation required 770 ft of pipe and 100 lb of powder. A similar job without the use of powder took 2 hours 15 minutes to prepare a tap hole for draining a 250-ton liquid salamander.

Powder lancing is a fast and effective method of piercing in numerous other steel mill and foundry applications. It is used in cleaning openhearth linings, and for openhearth furnace tapping.

POWDER PROCESSES—Parts I and II of this three-part article appeared in the July 22 and Aug. 5 issues of *The Iron Age*.

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Electric Weld Line Pipe

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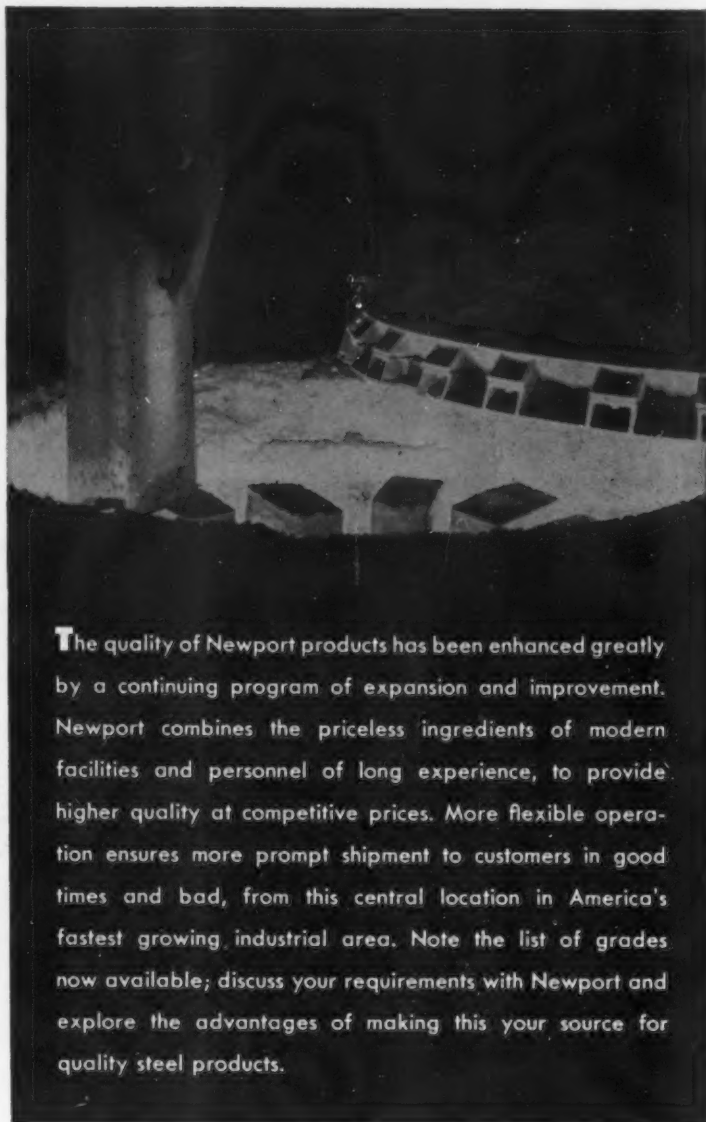
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Alloy Sheets and Plates

Roofing and Siding

Eave Trough and Conductor Pipe

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The quality of Newport products has been enhanced greatly by a continuing program of expansion and improvement. Newport combines the priceless ingredients of modern facilities and personnel of long experience, to provide higher quality at competitive prices. More flexible operation ensures more prompt shipment to customers in good times and bad, from this central location in America's fastest growing industrial area. Note the list of grades now available; discuss your requirements with Newport and explore the advantages of making this your source for quality steel products.



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Newport Steel is situated on the Mississippi-Ohio River system and the great Cincinnati rail hub. With the advantage of location, new river barge facilities and seven major railroads, Newport gives economical, dependable delivery to industrial areas throughout the Middle West and South.

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Even the best chef samples the soup

He doesn't trust to luck; as he works he tastes—samples—inspects.

There's an example here for many manufacturers. The *earlier* in your manufacturing that you can spot defects in parts or materials, the less it costs to salvage or scrap them—and you can correct the process that causes the defects.

You might call *this* kind of process control "correctioneering." Using fast testing methods by Magnaflux, time and labor are being saved by hundreds of companies—making everything from kitchen sinks to parts for guided missiles.

Total cost? Far less than the savings—usually under a penny or two per part inspected.

Ask to have a Magnaflux engineer show you where correctioneering can save you money—and *how much*. Or write for a free booklet "FINDING THE 'HOW AND WHERE' OF LOWER PRODUCTION COSTS."

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Technical Literature: Catalogues and

Castings

A graphically illustrated brochure published by Aluminum Alloys Corp. shows the company's complete facilities for production of porosity-free aluminum castings. Beginning with the aluminum ingot, every step through shipment of finished castings is illustrated by series-type illustrations. *Aluminum Alloys Corp.*

For free copy circle No. 1 on postcard, p. 131.

Blast cleaning equipment

Pangborn Corp. has issued a condensed catalog of its entire line of blast cleaning and dust control equipment and accessories. All items are listed by equipment, by type, and by purpose. The bulletin discusses Rotoblast, Airblast and Hydraulic methods of abrasive application with pictures and describes the various types of equipment which make use of these basic principles. *Pangborn Corp.*

For free copy circle No. 2 on postcard, p. 131.

Valve control

LimiTorque Valve Control is described and illustrated with pictures and diagrams in a folder now available. LimiTorque limits the amount of torque applied to valve operating members. It is particularly adaptable for use where automatic operation is desired or where emergency may require rapid, positive operation from a remote point. *Philadelphia Gear Works, Inc.*

For free copy circle No. 3 on postcard, p. 131.

Rolling doors

Booklet gives information on the advantages of different styles of upward-acting doors and offers dimensional information as an aid in planning. Among the products described and illustrated are steel rolling service doors, "Akbar" fire doors and shutters, Bifold doors, Rol-Top sectional overhead doors, steel rolling grilles and special doors and counter closures. *Kinnear Mfg. Co.*

For free copy circle No. 4 on postcard, p. 131.

FOR YOUR COPY

Money-saving products and services are described in the literature briefed here. For your copy just circle the number on the free postcard, page 131.

Steam drop hammers

An illustrative booklet has been issued by Erie Foundry Co. containing descriptions, suggested uses, and specifications of the company's steam drop hammers. Included are discussions and illustrations of drop hammer components such as cylinders and valves, tie plates, pistons, rods, rams, gearing and controls. *Erie Foundry Co.*

For free copy circle No. 5 on postcard, p. 131.

Plating equipment

Book illustrates, discusses and gives specific uses for Udylyte automatic plating machines. Included in the catalog of platers' equipment are: return types, straight lines, rotaries and juniors. Barrel plating equipment and accessories, electrical equipment, filters, dryers and a listing of processes and supplies are also included. *Udylyte Corp.*

For free copy circle No. 6 on postcard, p. 131.

Speed variators

A complete line of packaged speed variator drives from 1 to 200 hp is described in a General Electric bulletin. Designated as GEA-6127, the publication explains, with illustrations, the operation and application of the basic speed variator and additional features available. Special attention is given to the lumber, machine tool, textile and steel industries, as well the use of speed variators in materials handling. *General Electric.*

For free copy circle No. 7 on postcard, p. 131.

and New Bulletins

Pattern buyers guide

Brochure designed primarily as an aid to those who are not engaged in the foundry industry, but are faced with the problems of purchasing pattern equipment, is available from Master Pattern & Mold Co. The cover of this pocket-size guide contains a slide chart showing pattern recommendations by casting quantity requirements. This reference book contains a glossary of terms; a brief description of features found in cast iron patterns, brass patterns, permanent molds, aluminum patterns and others. Also discussed are auxiliary products of the pattern makers art. *Master Pattern & Mold Co.*

For free copy circle No. 8 on postcard, p. 131.

Punches, dies

Catalog illustrates styles and shapes of punches and dies which are commonly used. Included is a section on Buffalo type punches and dies and punches and dies for multiple punching with a plain or ground shank. A supplement listing the punches and dies carried in stock is also included. *Geo. F. Marchant Co.*

For free copy circle No. 9 on postcard, p. 131.

Industrial timepieces

A catalog is available featuring the full line of Minerva watches and stopwatches. The catalog covers special stopwatches for industrial, medical, radio and research purposes, with precision time and motion study features. Also described are the Minerva wrist watches and Wrist Chronographs, Curvimeter and the Stop-Watch-Man. *M. Ducommun Co.*

For free copy circle No. 10 on postcard, p. 131.

Lubrication chart

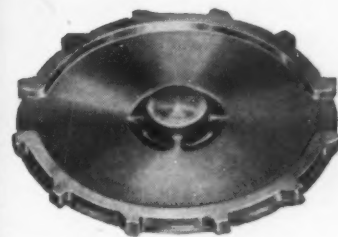
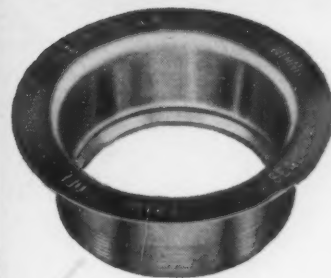
Lubrication chart gives complete, easy-to-understand lubrication data for the new Hyster, 15,000-pound capacity lift truck. The chart is suitable for hanging on walls. *Hyster Co.*

For free copy circle No. 11 on postcard, p. 131.

Turn Page

MUELLER BRASS CO. forgings* contribute to the efficiency of this modern waste disposal unit

*MUELLER BRASS CO. facilities include:
designing, die-making, forging, tooling,
machining, polishing, plating and assembly



Three Mueller Brass Co. forgings play an important part in the fine operating performance of this modern waste disposal unit made by the Eureka-Williams Co., Division of the Henney Motor Co., Inc. This unit does a speedy and thoroughly effective job of pulverizing garbage and has made life easier for American housewives. The impeller disposer that chops up the waste food in the disposal unit, the disposer cover and the sink mounting flange are all forged by the Mueller Brass Co. This is another outstanding instance where Mueller Brass Co. forgings have improved product performance and cut costs. High quality forgings can be produced from standard and special brass, bronze and aluminum alloys. And in addition, the Mueller Brass Co. offers complete service ranging from product design to finished part . . . Write today for complete information and new 32 page forgings handbook.

1. Sink mounting flange, forged, machined, nickel and chrome plated by Mueller Brass Co.

2. Machined and finished disposer cover forging.

3. Cutting side of impeller disposer forged from 600 series bearing bronze.

4. Reverse side of impeller disposer.

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Now! Greater than Ever FACILITIES

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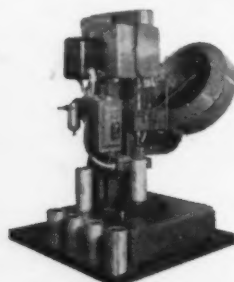
POWER SCREWDRIVER



BARREL FEEDER



BOWL FEEDER



SPECIAL

ASSEMBLING MACHINE

FREE TECHNICAL LITERATURE

Operation recorder

A new bulletin describing and illustrating the company's line of electrical and mechanical operation recorders, both round-and strip-chart models is available. Application of such recorders include batch weighing on platform scales, automatic weighing machines, valve or gate operation, gas holder movement and position, or liquid level variation. *Bristol Co.*

For free copy circle No. 12 on postcard, p. 131.

Machine tool

The Rindis Universal is capable of over 50 different operations. Ideal for tool rooms, engineering shops, mobile workshops, model shops, research laboratories, technical colleges and automobile shops. Machine is described and illustrated in a bulletin with specifications included. *Newage International, Inc.*

For free copy circle No. 13 on postcard, p. 131.

Precipitator

The dynamic precipitator in which functions of exhaustor and dust separator are combined in a compact unit becomes a complete dust control system ready for the necessary duct connections when mounted on its dust storage hopper and provided with a motor. A booklet is available on this system and other dust control machines. *American Air Filter Co., Inc.*

For free copy circle No. 14 on postcard, p. 131.

Grinding machinery

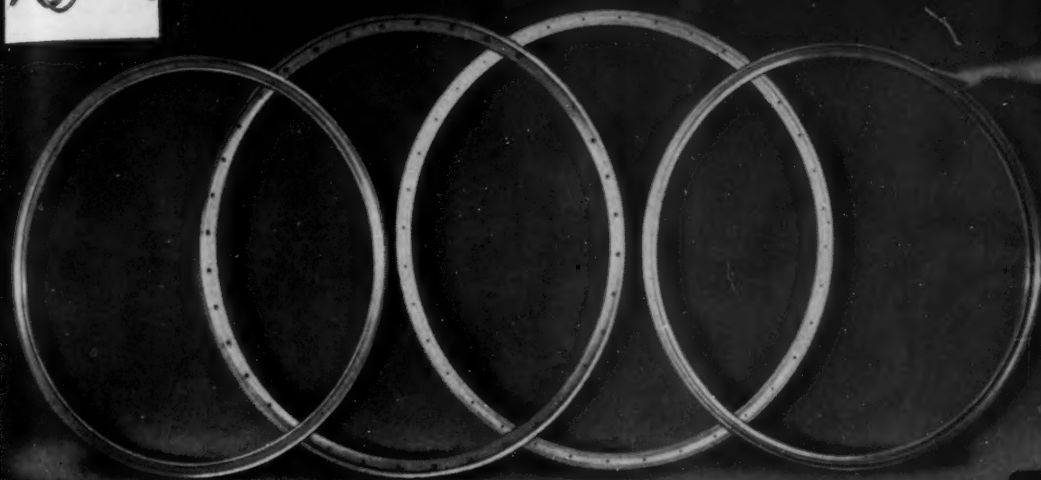
Folder contains complete face and knife grinder specifications for the Bridgeport line with model numbers and what duties they are capable of. Also featured is the company's vertical spindle machine for fast and accurate grinding of surfaces which offers the following features: completely hydraulic, high speed table travel, forced feed way and bearing lubrication and a hydraulic counterweight. Illustrated floor grinders are included. *Lobdell United Co., Div. United Engr. & Foundry Co.*

For free copy circle No. 15 on postcard, p. 131.



Contact **KAYDON** Muskegon

FOR ALL TYPES OF BALL AND ROLLER BEARINGS: 4" BORE TO 120" OUTSIDE DIAMETER



Kaydon four-point contact ball bearings
56.500 x 66.000 x 2.5625

Four-point contact ball bearings...

Featherweights for heavy-duty applications — built by Kaydon

To keep a classified product's overall design within practical limits, a major manufacturer required special bearings. Specifications included: extremely thin section in relation to 66" O.D. . . . light weight . . . with integral gear teeth and strength to withstand constant, hard usage. Furthermore, the bearings would have to be mass-produced.

Knowing that KAYDON concentrates in design and production of special thin-section and/or high-precision bearings, the manufacturer got in touch with KAYDON sales engineers. In a short time the heavy-duty feather-weights, shown here, were developed to solve the problem.

Similarly, for special bearings you, too, can save time, money and trouble by contacting KAYDON of Muskegon.



Just Out! Get your copy of the new KAYDON
Reali-Slim thin bearing catalog No. 54.

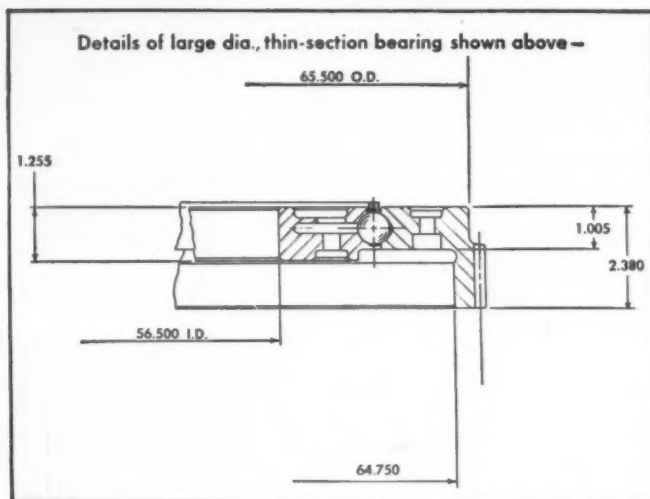
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K547



KAYDON Types of Standard and Special Bearings:
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1. **ALLENPOINT SET SCREWS** with the new smaller point — proved by impartial laboratory tests to have greater locking power and vibration resistance, plus uniformly high shaft holding power, compared with conventional cup point screws and those with serrated or angled points.
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COMPRESSOR:

Small rotary unit
designed for high output.

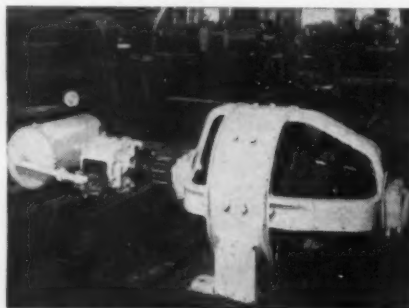
Production is scheduled to start soon in San Francisco on a unique double chamber rotary sliding vane compressor—little bigger than a typewriter—but with output of 120 cfm at 120 psi.

The unusual new unit uses two independent, contoured compression cylinders off a single concentrically mounted shaft. This results in high output at relatively low rotating speeds and cuts friction on the vanes.

Vanes are of oil-impregnated, iron-copper alloy, eliminating the conventional oil separator found with lubricated sliding vane compressors.

Gas Engine Possible

Designer H. M. Petersen, San Francisco engineering consultant, said a miniature sliding vane gasoline engine of the same size with many parts interchangeable with the compressor is also under design.



120 cfm at 120 psi . . .



Light, compact . . .

TECHNICAL BRIEFS

WANT MORE DATA?

You may secure additional information on any item briefed in this section by using the reply card on page 131. Just indicate the page on which it appears. Be sure to note exactly the information wanted.

Major immediate market is in units to power air hammers for construction work replacing current bulkier units. These generally have single chamber with eccentrically mounted shaft or pump in two stages to obtain necessary pressure.

Through higher output, elimination of the chamber lubrication system and costly oil separator, the Petersen unit is expected to sell complete with motor and tank for much less than competitive models priced at about \$1800 to \$3000.

Magnesium Model Suggested

Airplane manufacturers have shown interest in development of a light compact magnesium model. An additional market is expected for use in remote areas where portability is a major factor.

The prototype of the self-lubricating vane model weighs 140 lbs. and has an inside bore of 6 in. Rotor diameter is 4 in. Other models ranging from 6 in. bore diam to 18 in. are being designed for an output range from 30 to 750 cfm.

Vanes Spring Loaded

The porous vanes, generally outlast the useful life of the parts in conventional applications. They consist of 75 pct iron and 25 pct copper compressed into briquettes and dipped in oil for about 25 pct lubricant content.

The material, made by Amplex Div. of Chrysler Corp. was selected after five other types failed to meet requirements. Life tests on the unit indicate capillary action does not bleed the lubricant or contaminate the air. Vanes are spring loaded for good chamber contact.

RESEARCH:

Pulse current used to amplify tiny signals.

A new method of amplifying weak electrical signals, the pulse current system, may offer research engineers an improved method of measuring small currents.

The principle of using pulse current to amplify small signals was discovered by GE engineers in the company's General Engineering Laboratory, Schenectady, N. Y.

Experimental work has shown that a pulse type magnetic amplifier can control equipment from a signal level of 10^{-16} watts over an ambient temperature range of -70° to $+140^{\circ}\text{C}$. This compares with 10^{-8} watts attainable with conventional magnetic amplifiers.

For Control Devices

GE is now developing pulse-type amplifiers for use in conjunction with conventional magnetic amplifiers wherever extreme sensitivity is desired.

With the pulse principle accuracy of existing control devices will be improved and development of new control devices accelerated.

Present instruments used to measure force, movement, light and temperature have been limited in sensitivity by the ability of amplifiers to pick up their weak signals.

Reactors In Cascade

Main component of the amplifier is a tiny reactor, about two-thirds the size of a shirt button. It consists of two windings of copper wire around a core of saturable magnetic material.

The reactors are used in cascade, each one boosting the signal to a higher level. Current enters one of the copper windings, while the signal, converted by conventional means to electrical energy, enters the other winding.

Controlled By Core

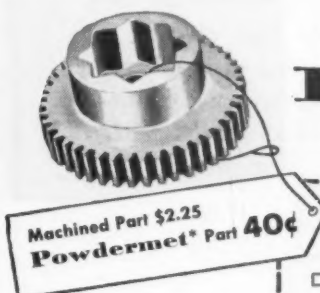
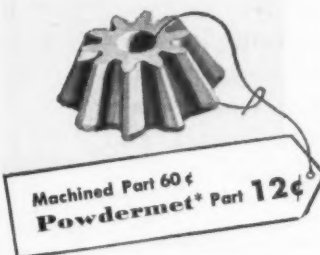
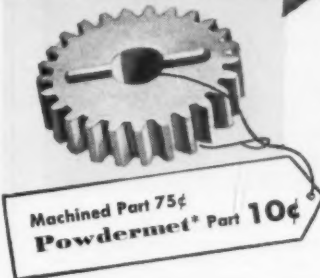
Amplification results from the action of the signal on the magnetic state of the core. The pulse current is then controlled by the core to produce an output signal. Interstage coupling is possible.

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Why pour money into expensive machining operations?

POWDERED METAL PARTS
can do the job for much less!



Tough, intricate parts ready for assembly without further processing—at savings of up to 600% over identical machined parts! No wonder industry chooses Powdermet.*

Low-cost PM parts are die-pressed to close tolerances, have excellent wearability, and a wide range of alloys are available—many exceeding the tensile strengths of mild steel. Through controlled porosity and electrical permeability, many special properties are achieved... such as oil-impregnation for life-time self-lubrication. That's why Powdermet* parts are often the best parts possible for gears, bearings, filters, etc.

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Name..... Title.....

Company.....

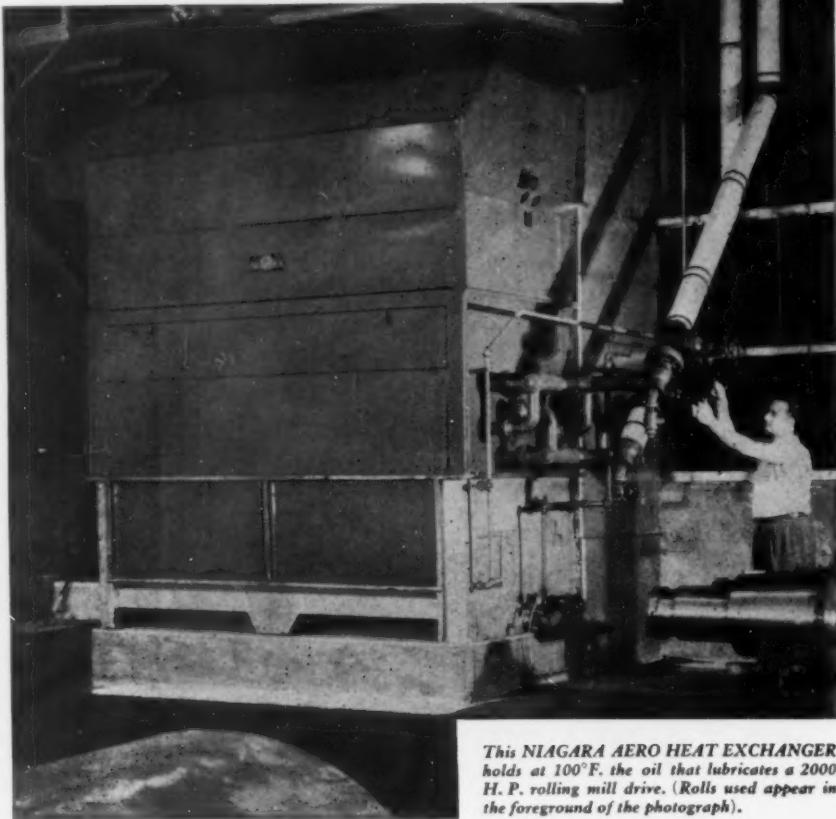
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YOU CAN KEEP ACCURATE CONTROL OF LUBE OIL TEMPERATURE



This NIAGARA AERO HEAT EXCHANGER holds at 100°F. the oil that lubricates a 2000 H. P. rolling mill drive. (Rolls used appear in the foreground of the photograph).

The Niagara Aero Heat Exchanger uses atmospheric air to cool liquids and gases by evaporative cooling, removing the heat at the rate of input, controlling temperatures precisely. You save 95% of the cost of cooling water. You get great saving in piping, pumping and power, quickly getting back the cost of the installation.

You can cool and hold accurately the temperature of all fluids, air and gases, water, oils, solutions, chemicals for processes and coolants for mechanical and electrical equipment. You can cool welding machines, hydraulic and extrusion presses, plastic molds, furnaces, controlled atmospheres, quench baths, obtaining better results with precise temperature. You obtain closed system cooling, free from dirt or scale.

For further information, write for Bulletin No. 120

NIAGARA BLOWER COMPANY

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Niagara District Engineers in Principal Cities of United States and Canada

TECHNICAL BRIEFS

INSULATION:

**Flame tests prove 85 pct
magnesia insulation.**

Fire tests on 85 pct magnesia thermal insulation demonstrate the material will withstand a 2000°F flame for an extended period without appreciable damage.

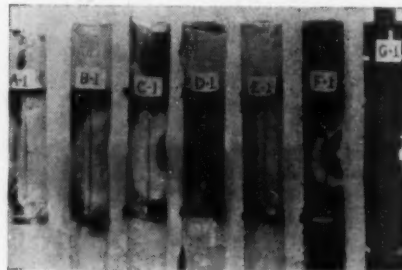
The tests, conducted by the Technical Committee of The Magnesia Insulation Mfrs. Assn., indicate the insulation is capable of protecting pipes and equipment and their contents under average fire conditions.

Remains Intact

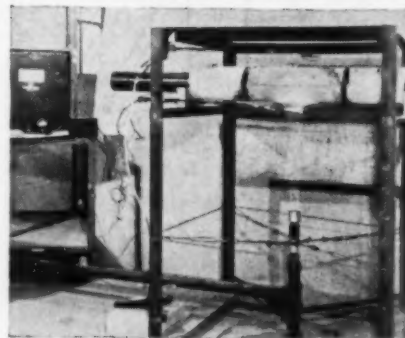
The insulation, applied to a section of steel pipe by standard methods, showed no damage beyond slight surface cracks after 2 hours in the intensely hot flame. Temperature on the surface of the test pipe was below 600°F.

Results indicate that 85 pct magnesia would remain intact and would protect pipe lines, flues, ducts and other equipment from fire damage. During a plant fire it would also prevent sudden temperature rise of the contents of the pipes and vessels.

Tests indicate the material resists fire damage well when covered with canvas, galvanized steel,



Samples were tested . . .



. . . In this test setup

AUTOMATION at work

... supported by
ACME
Weldments



18,240 operations — 80 automobile transmission cases every hour! That adds up to quite a day's work, but it's no problem for this transfer machine built by the Baush Machine Tool Company of Springfield, Massachusetts. Unusual sectional design permits rapid retooling, keeps work handling to a minimum, and speeds production in many of America's largest automotive plants.

To provide the *strength* and *rigidity* required by this complex, automatic machine, Baush engineers specified all-welded steel bases fabricated by *Acme Welding*. Beside being stronger these Acme weldments are lighter and make possible the incorporation of many exclusive design features. Perhaps these advantages of Acme weldments are important to your product . . . whatever your requirements, why not call on Acme today.

A.S.M.E. U68-U69 Qualified Welders • A.P.I. - A.S.M.E. Approved
Underwriters Label and Inspection Service • Navy Approved
National Board Approved • Hartford Steam Boiler Inspection Service

Acme WELDING
DIVISION of THE UNITED TOOL & DIE CO.

Send us your blueprints for a prompt quotation and ask for our informative booklet, "The FACTS about WELDMENTS and CASTINGS."

Ask for Bulletin B-2.

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441 LEXINGTON AVE., NEW YORK 17, N. Y.

IF YOU WANT LOWER CLEANING COSTS, THEN YOU WANT A STEEL SHOT THAT GIVES YOU ALL THIS!

- **Maximum cleaning speed**
- **Longer abrasive Life**
- **Minimum parts wear**
- **Low purchase price**

TRU-STEEL is that kind of steel shot. Controlled chemical analysis has made Tru-Steel a high-carbon steel shot of tool steel quality . . . with the proper hardness for fast, thorough cleaning. And Tru-Steel *lasts* because it's scientifically heat-treated and drawn for maximum toughness. Machine parts last longer, too, because Tru-Steel does not break into fines that cause wear.

Cost? Thanks to new equipment and improved manufacturing techniques, Tru-Steel's purchase price is lower* than any other steel shot of comparable analysis and heat-treatment. In other words, you get the best for less. Compare costs yourself and see.

Sound logical? Write us today. We'll be glad to send you full information and prices.

**In sizes most popular for blast cleaning.*

**STEEL SHOT
PRODUCERS, INC.
BUTLER, PA.**



Subsidiary of Pittsburgh Crushed Steel Co., Pittsburgh, Pa.

Oldest and largest manufacturers of metal abrasives in America

TECHNICAL BRIEFS

**Canvas covered 85 pct
magnesia resistance good.**

aluminum, or various asphaltic jackets. The type of jacket had little effect on heat transfer through the insulation.

Six other commercial types of insulation generally used for the same service were tested under identical conditions.

The association's technical committee said that canvas-covered 85 pct magnesia showed superior resistance to the hot flame. While jacketing other than canvas improved the performance of the other types of insulation tested, 85 pct magnesia performed about as well under all conditions.

How Tests Were Made

The tests were carried out with empty 6-ft lengths of 3-in. standard steel pipe covered with 1 in. of insulation. Chromel-alumel thermocouples cemented at the top and bottom of the pipe under the insulation indicated temperature increase at the pipe surface.

The pipe was supported horizontally in a test stand about 10 in. above the orifice of a burner firing a mixture of compressed air and manufactured gas. An 8-gage chromel-alumel thermocouple gave temperature readings for the flame jet at a point 1 in. below the insulation. The 2000°F temperature was held within $\pm 20^\circ\text{F}$.

Temperature readings from top and bottom pipe surfaces during tests were recorded at intervals until the bottom surface reached 1000°F. This was taken as the point of insulation failure. If this temperature was not attained, the test was concluded after 2 hours.

Temperature Readings

At the end of the 2-hr period the pipe insulated with canvas-jacketed 1-in. thick 85 pct magnesia showed a bottom pipe surface temperature of 593°F and a top surface temperature of 501°F.

This was the lowest pair of temperature readings noted; the next lowest readings among other insulations which were tested with canvas-jacketing for 2 hrs were

Every foundryman and casting buyer should have a copy of this
new
SHELL MOLDING MANUAL



Just off the press! An up-to-the-minute, fully illustrated "here's-what's-new" manual on SHELL MOLDING—*yours* for the asking! This 28-page brochure dramatically tells, with BIG pictures and informative text, about the latest developments in shell molding and the benefits it offers to the foundryman and his customer.

New techniques—big benefits. You'll read how this new casting process has made possible astonishing reductions in machining and finishing costs . . . how it has resulted in drastic cuts in foundry casting time. There are tips on new materials and equipment—the latest data on the resins and machinery that make the shell process so rewarding to those who make and buy castings.

Published by General Electric. G.E., a major supplier of resins and silicone release agents for the shell-molding process, has spared no pains to make this manual informative, readable, *timely*. It's "must" reading—right now—for every foundryman and casting buyer! The coupon will bring *you* a copy—promptly!


A limited number of 35-mm. sound-slide films, "Shell Molding and You," are also available on a loan basis. Request on company letterhead, stating preferred date.

SEND FOR YOUR FREE COPY TODAY!

General Electric Company
Section 1418-3B, Chemical Division
Pittsfield, Massachusetts

Please send me a free copy of *G-E Shell Molding Manual*.
() We are presently using the shell-molding process.
() We are interested in the shell-molding process.

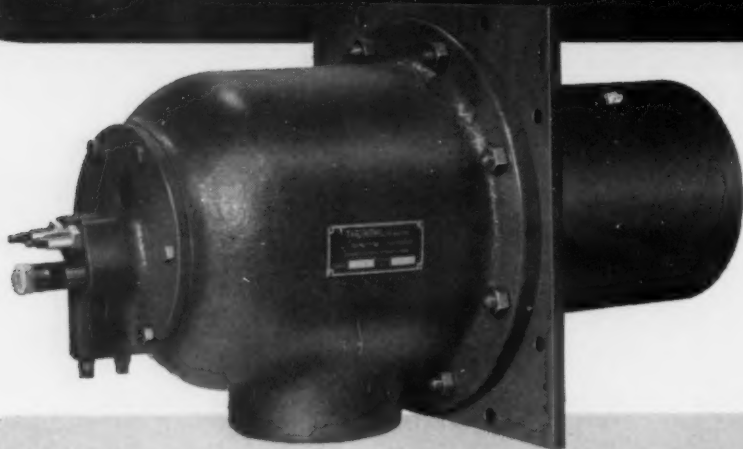
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Progress is our most important product
GENERAL  ELECTRIC

August 12, 1954

UP TO 75% REDUCTION IN EQUIPMENT SIZE

with **T H E R M A L**
High Velocity OIL BURNERS

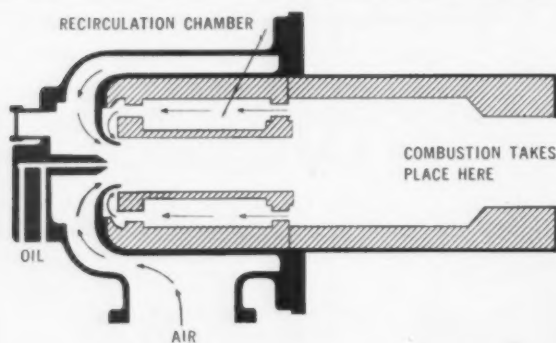


OIL COMPLETELY VAPORIZED WITHIN BURNER

The THERMAL High Velocity Oil Burner employs a unique principle of recirculation of hot gases that vaporizes the oil before it is burned. This results in a short, clear flame and heat release rates up to 10,000,000 btu per hour per cubic foot of combustion space.

By proper utilization of the burner's characteristics of a high velocity, high temperature, non-luminous flame, remarkable results have been obtained in furnaces, kilns, ovens and heat exchange equipment of all types.

For complete information write for Bulletin 103.



THERMAL High Velocity Oil Burners for the distillate oils (thru #3) are available in seven standard models with outputs from 50,000 btu/hr to 4,000,000 btu/hr.

OTHER THERMAL PRODUCTS & SERVICES:

GAS & OIL BURNERS • COMBINATION GAS-OIL BURNERS •
HEAT EXCHANGERS • SUBMERGED COMBUSTION • COMBUSTION
& HEAT TRANSFER ENGINEERING

T H E R M A L

Thermal Research & Engineering Corp.

CONSHOHOCKEN • PENNSYLVANIA

REPRESENTATIVES IN PRINCIPAL CITIES

TECHNICAL BRIEFS

755°F on the bottom of the pipe and 670°F at the top.

Of the other insulation materials tested, two failed almost immediately, the first melting and eroding in 42 sec, the second disintegrating in 47 sec, both leaving the pipe bare at the point of flame impingement.

None of the remaining four failed completely but two showed marked concavity at the point of flame impingement after 30 min. The other two transmitted about 25 pct more heat to the pipe surface than did 85 pct magnesia insulation.

CARBIDES:

Use in mill rolls a success story for tungsten carbide.

Tungsten carbide has been successfully used as a work roll material for several types of rolling mill. In many cases the rolls have permitted several advantages.

Large carbide rolls have been used in 4-high and cluster-type mills, including Steckel, Sendzimir, Bennewitz, Schmidt, Waterbury Farrel, Torrington, Farrel-Birmingham, E. W. Bliss, United Engineering, Mesta Machine, Treadwell Engineering, and Wean Engineering cold rolling mills.

Fewer Changes Needed

Rolls up to 42 in. long have been produced and are giving outstanding service life, normally outlasting other rolls many times. One large stainless steel strip producer is now able to roll strip without roll changes for three or four turns whereas previously with steel rolls it was necessary to change the work rolls six or seven times per turn.

Tungsten carbide rolls, such as those made by Metal Carbides Corp. of Youngstown, are giving superior service life in the rolling of strip low and high carbon steel, razor steel, stainless steel of all analyses.

Carbide rolls give an exceptionally smooth and flat surface to the strip rolled which improves all subsequent plating operations. Platers report that less plating material is required to plate carbide rolled steel due to its smoother, flatter surface.



FULL VISION means you'll *Move More with a* **MICHIGAN**

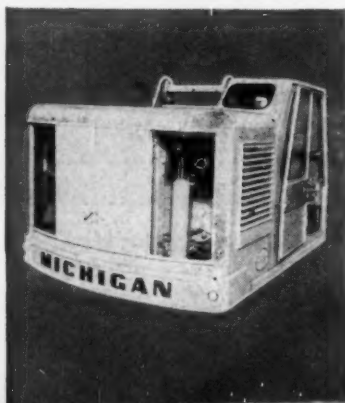
Step into a MICHIGAN* cab, and sit in the operator's comfortable seat. Notice how easy it is to follow every move on the job. 3604 square inches of glass!—see what excellent vision is provided, in all directions and overhead.

Here, indeed, is a masterpiece of smart modern design: a truly functional cab—fully ventilated, quiet; a comfortable cab designed to make the operator's job as easy as possible. Look, also, at the outside of the cab; at the adjustable louvers

on both sides for good ventilation; the sliding rear doors that make it easy to get at the engine; the rear window to complete the full-vision facility.

For an easy point-for-point comparison of the MICHIGAN with other machines, send for the MICHIGAN Fact Folio: contains full information, including an interesting book "More Yardage Through Air Power." The coupon gets prompt action.

*A Trademark of Clark Equipment Company



CLARK EQUIPMENT



CLARK EQUIPMENT COMPANY
Construction Machinery Division
444 Second Street, Benton Harbor, Michigan

Please send the MICHIGAN "24" Fact Folio

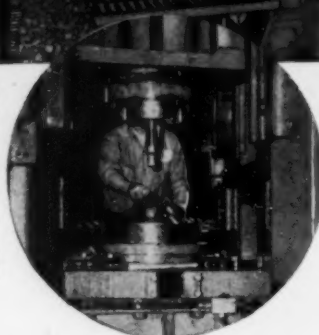
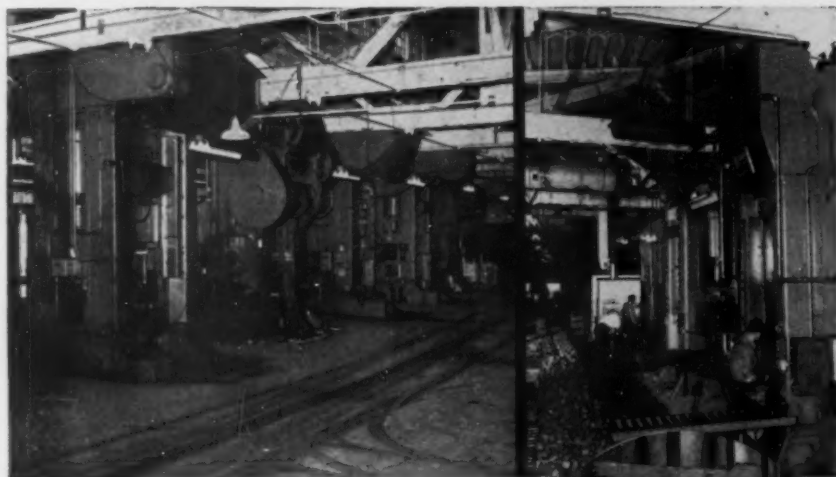
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Firm _____

Address _____

City _____ County _____ State _____

WARCO PRESSES USED BY OLIVER CORPORATION FOR UNUSUAL FIVE STEP COLD EXTRUSION LINE



Cold extrusion of mortar shells is being performed on five Warco Presses by the Oliver Corp., Springfield, Ohio, with substantial savings in material and labor. Many operations normally required are eliminated or decreased, and, in 100,000 shells upwards of 265,000 lbs. of steel are saved.

Slugs are cut from 2-1/2" rod, approximately 1-3/16" in length. They are then subjected to a coining operation in an 800-ton Warco Knuckle Joint Press exerting approximately 150-ton pressure per square inch of slug area. A Warco 600-ton Eccentric Gear Press then performs a backward extrusion.

The third step is a forward extrusion accomplished on a Warco 200-ton Eccentric Gear Press. Here the yield point of the metal is increased from about 32,000 psi to 90,000 psi. A Warco 400-ton Eccentric Gear Press then sizes the shell and extrudes the base to desired thickness. A Warco 150-ton Single Crank Press performs the final extrusion. The necking-in operation is also performed at this station, where the shell is completed.

For further data concerning cold extrusion presses contact Warco at The Federal Machine and Welder Co., Warren, Ohio. Their wide experience is at your disposal.

THE FEDERAL MACHINE & WELDER COMPANY

WARREN, OHIO



TECHNICAL BRIEFS

TESTING:

Rotating parts balanced faster, more accurately.

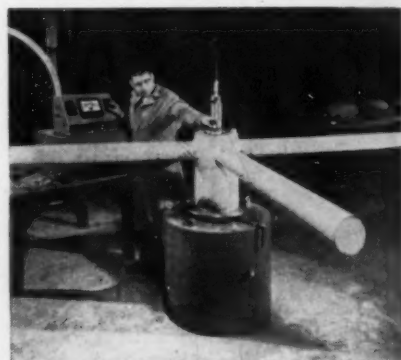
Static balancing of fans, helicopter rotors and other rotating parts is being done faster and more accurately at Dean Benson Research Inc., with a newly developed vertical balancing rod on which Baldwin SR-4 resistance wire strain gages are bonded.

The rod supports parts to be balanced. Unbalance and its location are detected by bending strains in the rod. The measuring instrument for the balancer was developed by Ruge-deForest Inc., affiliate of Baldwin-Lima-Hamilton Corp., Phila.

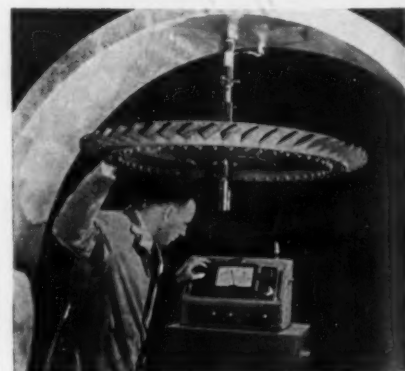
Speeds Balancing

The high sensitivity of the balancer has been demonstrated in many tests including a 40-ft. rotor for a Kaman helicopter. The blades were balanced to 4 inch-ounces which is 32 times more accurate than specifications require.

Time for making these tests was reduced substantially. In one in-



Rod supports large unit . . .



Meter shows deflection . . .



10 cold-finished
JALCASE
grades

**J&L
STEEL**

MEMORANDUM

*Here's another new book
by J+L...you'll want it for
your reference material*

NOTE:

Data on J&L's Jalcas include information on the superior machinability of this cold finished steel. Both speed of machining and the amount of metal removed per revolution can be substantially higher than with other steels of approximately the same mechanical properties. Jalcas also gives longer tool life between grindings. In many cases the machined surface of a Jalcas part requires no subsequent finishing operation.

You can help us place a copy of this *new* book in your hands. Please give us your name and address. We'll do the rest. It will be *mailed* without cost to you—no intrusion on your time.

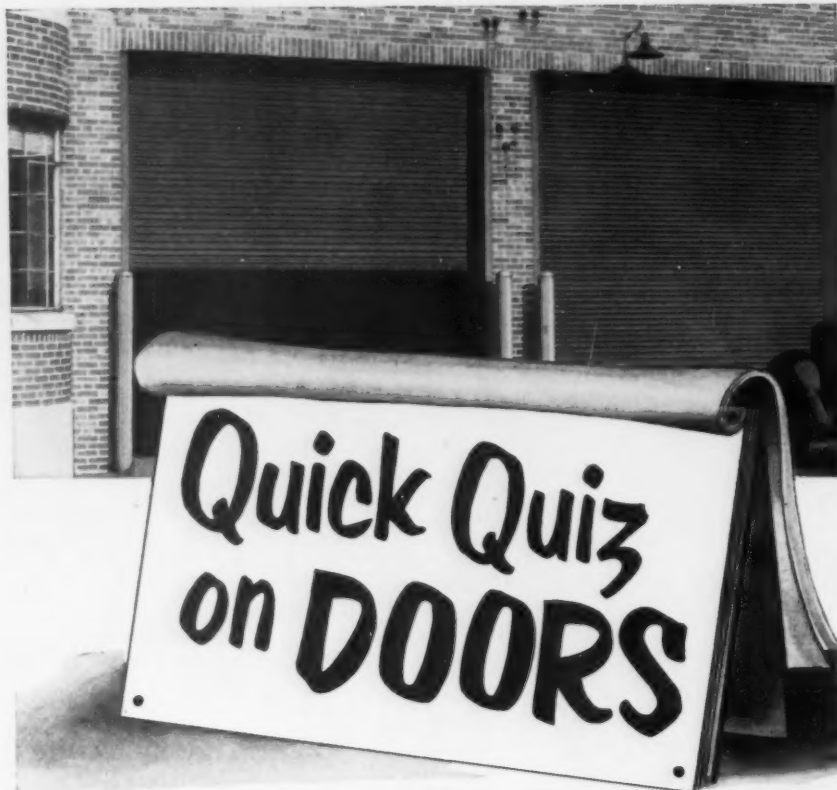
Jones & Laughlin
STEEL CORPORATION — Pittsburgh

**J&L
STEEL**

Jones & Laughlin Steel Corp., Dept. 403
3 Gateway Center, Pittsburgh 30, Pa.

Please send me a copy of your new Booklet, "10 Cold Finished JALCASE Grades."

Name _____
Title _____
Company _____
Address _____



QUESTION: How can we be sure of door efficiency?

Answer: The upward-coiling curtain of interlocking steel slats, originated by Kinnear, is the key to many basic door advantages.

QUESTION: How much floor space is taken up by the doors?

Answer: You can make full use of all floor and wall space around Kinnear Rolling Doors, inside and outside the opening, at all times. By coiling straight upward, they operate entirely within the space they occupy when closed.

QUESTION: Can we run crane or hoist rails and other overhead equipment close to the doorway?

Answer: Yes. Kinnear Rolling Doors use no ceiling space, except for the compact hood area into which the curtain coils. This hood can often be recessed in the wall, or mounted outside the building, so that ceiling heights can be held to minimum, cutting building costs.

QUESTION: Are the doors easy to operate?

Answer: Strong torsion-spring counterbalancing makes even manual-lift Kinnear Doors extremely easy to operate. They are also ideal for motor operation—no lengthy operating cables, no projecting tracks, no bulky mechanism. Push-button controls can be placed at any number of points.

QUESTION: What about protection?

Answer: Kinnear Rolling Doors guard every opening with a curtain of steel anchored in steel jambs from floor to ceiling—a fire-

resistant barrier against wind, weather, theft, or vandalism.

QUESTION: Can we count on low maintenance costs?

Answer: Many Kinnear Rolling Doors have been in continuous daily use upwards of 20, 30 and 40 years without repair or maintenance expense, as proved by reports from many users.

QUESTION: What about corrosion resistance?

Answer: A heavy coating of pure zinc (1.25 ounces per square foot, ASTM Standards) applied by the hot process, gives Kinnear Rolling Doors a highly durable galvanized finish. In addition Kinnear's special Paint Bond, a phosphate immersion treatment, provides for thorough coverage and adherence of paint.

QUESTION: What if the doors are damaged?

Answer: The steel slat construction of Kinnear Rolling Doors absorbs a lot of punishment. Slat accidentally damaged can be individually replaced any time. Detail drawings of every door are kept in Kinnear's own fireproof vaults.

QUESTION: What sizes are available?

Answer: Kinnear Rolling Doors are engineered to individual needs, in any practical size (doors several hundred square feet in area are not unusual). They are easily installed in new or old buildings.

In short, you get all the correct answers to long-lasting, low-cost door convenience and efficiency in the famous

Kinnear Steel Rolling Doors

Write today for full information

The KINNEAR Manufacturing Co.

1760-80 Fields Avenue, Columbus 16, Ohio
1742 Yosemite Ave., San Francisco 24, Cal.
Offices and Agents in All Principal Cities



KINNEAR
ROLLING DOORS

TECHNICAL BRIEFS

stance a 2000-lb propeller was balanced in 15 to 20 minutes in contrast to 3 to 4 hours previously needed.

Balancer can also correct balance of helicopter blades, across the width of the blades.

The unit consists of a vertically supported rod on which eight special Baldwin SR-4 strain gages are bonded in pairs 90° apart. Changes in the electrical resistance of these gages under stress are measured by electronic amplifier and bridge circuits contained in a small indicator cabinet.

Deflections caused by unbalance can be read directly in inch-ounces on the meter dial. Independent readings 90° apart pinpoint the angular location of unbalanced weight so that another weight of the indicated amount can be placed to balance the excess weight. Convenience in using the balancer is increased by the ability to rotate the balancing rod without moving the part under test.

HOIST:

Huge steam drum raised 10 stories at power plant.

A huge steam drum weighing over a quarter of a million pounds was raised almost 10 stories high recently in the first of four big hoisting operations for electric power plants in Los Angeles and New Orleans.

The large drum, 58 ft long and 6 ft in diam, was installed 125 ft above ground at the Valley Steam Plant of the Los Angeles Dept. of Water & Power.

Here, it will serve as the main drum for a boiler which produces steam to operate turbines generating electricity for the municipal power system.

Completed in 12 Hours

The difficult hoisting job was accomplished with wire rope supplied by the Wickwire Spencer Steel Div. of Colorado Fuel and Iron Corp. The first lift at the Los Angeles plant took approximately 12 hours to complete, and was handled by the Riley Stoker Corp., who also built the drum.

Tough
corrosion problems
solved with **HARPER**
everlasting
fastenings....

Destructive corrosion, rather than break-down, threatens the equipment you manufacture...and that equipment is no better than the fastenings that make its operation possible.

Are you using the finest in corrosion-resistant fastenings—fastenings by Harper?

The H. M. Harper Company is the world's largest and oldest exclusive producer of fastenings from corrosion-resistant metals. Over 7,000 items are carried in stock, bringing to you the multiple advantages of a single source of supply—one order to write—one account to keep—one bill to pay.

Harper branch offices and distributors are located in all market areas, ready to give you prompt service. Harper metallurgists and engineers will gladly work with you on any tough fastening problem.

THE H. M. HARPER COMPANY
8215 Lehigh Avenue
Morton Grove, Illinois



FASTENINGS OF HIGH TEMPERATURE ALLOYS

August 12, 1954



$\frac{1}{2}$ -13 x 4
Silicon Bronze
Carriage Bolt

BRASS • NAVAL BRONZE
• SILICON BRONZE
• MONEL • NICKEL
• ALUMINUM
• ALL STAINLESS STEELS

SPECIALISTS IN ALL CORROSION-RESISTANT FASTENINGS

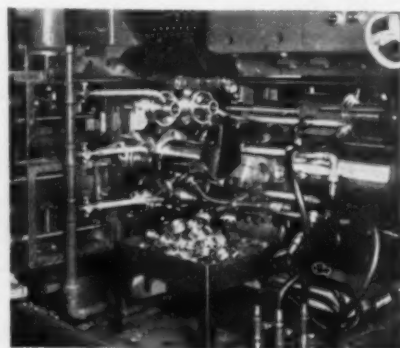
MACHINING:

Carbide tools boost automatic output 50 to 100 pct.

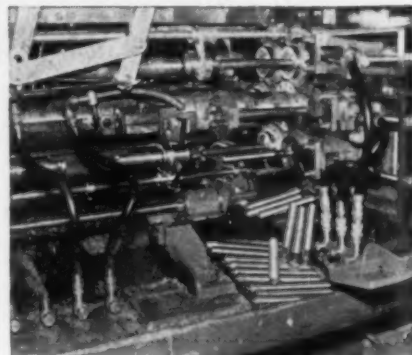
Maximum use of carbide tooling for multiple spindle bar automatics would permit production increases of 50 to 100 pct a recent carbide-automatic research study estimates. The cooperative project is sponsored by Cone Automatic Machine Co., Windsor, Vt., and Carbology Dept., General Electric Co., Detroit.

The studies showed that:

1. Multiple tool setups of automatic machines are not barriers to cemented carbides.
2. Tool holders, as well as auxiliary attachments, should be engineered to meet job conditions.
3. Proper selection of carbide grades and tool geometry are more important in applying carbides to automatics than to other machines.
4. Adequate horsepower to the work spindles is essential.
5. Supplying a generous amount of water-based coolant to the cutting areas is a must.



Half as many tools . . .



Two every 7 seconds . . .



**THERE ARE EXTRA DOLLARS
IN THIS SCRAP PILE!**

...when you install an

American
**METAL TURNINGS
CRUSHER**



Pays for itself in 3 Profitable Ways:

- 1 **TOP SCRAP VALUE.** Uniform short shoveling turnings produced by an American bring up to \$4 per ton more than regular machine shop turnings.
- 2 **INCREASED CUTTING OIL RECOVERY.** Up to 50 gallons per ton are released from turnings reduced in an American.
- 3 **EASIER HANDLING, STORAGE.** American-reduced turnings require but a fraction of the usual storage space . . . are easily briquetted.

American
PULVERIZER COMPANY

Available in 1 to 10 tons per hour capacities to meet your needs. WRITE today for the complete American profit story.

Originators and Manufacturers of Ring Crushers and Pulverizers

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WELLMAN ENGINEERING

announces the acquisition of

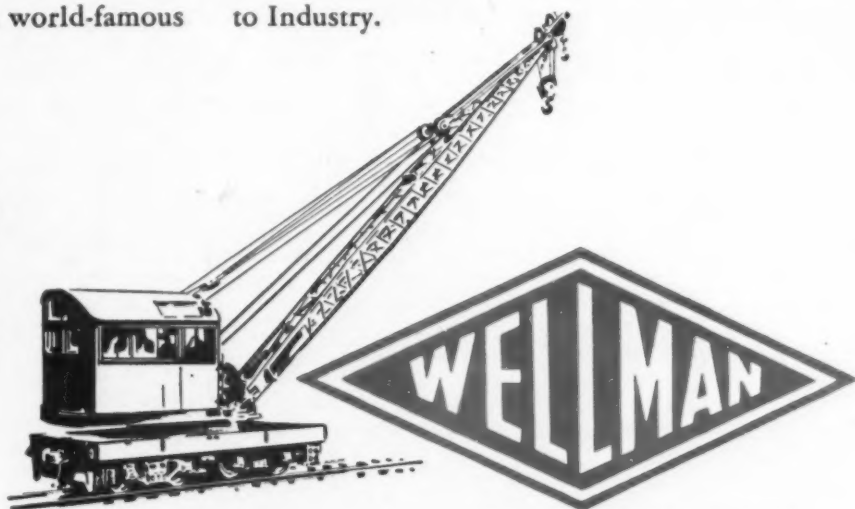


TO further round out its line of heavy duty materials handling equipment, Wellman Engineering has purchased the Locomotive Crane Division of The Browning Crane & Shovel Company, Cleveland, Ohio. Modern diesel-powered Browning Locomotive Cranes . . . world-famous

for their rugged design and speedy, efficient performance . . . join the long list of WELLMAN products for steel, shipping, transportation, utilities, construction and materials handling fields . . . all backed by 58 years of WELLMAN service to Industry.

WELLMAN PRODUCTS

HULETT ORE UNLOADERS
UNLOADING TOWERS
SPECIAL-PURPOSE CRANES
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CHARGING MACHINES
FORGING MANIPULATORS
SOAKING PIT COVER
CARRIAGES
GAS PRODUCERS
MINE HOISTS
SKIP HOISTS
CLAMSHELL, DRAGLINE
BUCKETS
POWER CYLINDERS
and now—
LOCOMOTIVE CRANES



THE WELLMAN ENGINEERING COMPANY

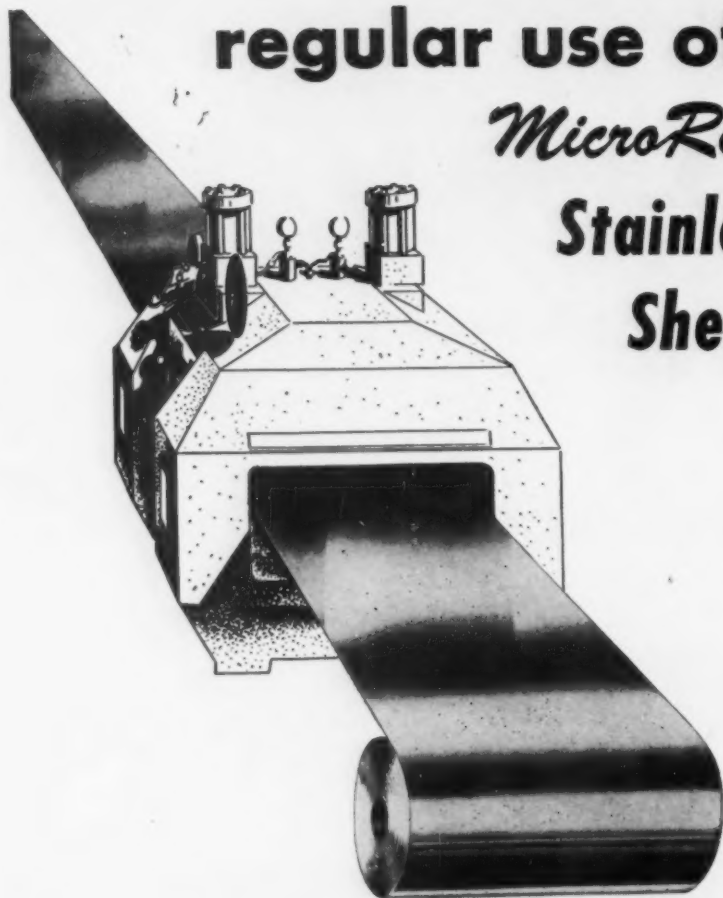
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MicroRold®

Stainless Sheets



SAVES MONEY!

Stainless sheets are usually ordered by gauge number—with permissible A.I.S.I. thickness variation of plus or minus 10%—but are sold on a weight basis. Thus, you may order 18 gauge, needing about .0475" thickness, and receive .052" thickness. But Micro Rold may be held to a 3% plus or minus tolerance; and you may order by gauge number, specifying that it be rolled on the "light side" of the gauge range. While these savings may not be apparent in every single sheet of MicroRold, the weights will average less than the theoretical when figured over a period of time. These savings can be substantial in your annual profit picture.

Washington Steel
Corporation
WASHINGTON, PENNSYLVANIA



Engineers tested their theories in production . . .

Machine weight while important is not as important as weight distribution in obtaining maximum rigidity.

Engineers tested their theories on actual jobs using commonly known tools. One of these was a setup for fast threading with carbide.

The threading job produced a 7¾-in. long machine tool leveling screw from 1-in. diam SAE B1112 screw stock. It was set up on a 1½-in. 6-spindle 50 hp automatic with Carboloy grade 370 carbide.

Production Rate Up

In production, two identical lengths of stock were fed out simultaneously, and screws threaded at the rate of two every 7 seconds, or 994 screws per hour. Formerly, with high speed steel tools, the machine produced only 140 pieces per hour.

In operation, the machine generated a direct spindle speed of 958 rpm and a die spindle speed of 628 rpm for a total effective spindle speed of 1586 rpm.

Carbide chamfer and cutoff tools each produced 700 pieces per grind while the threaders turned out 1000 screws per grind. Feeds for the chamfer and cutoff were 0.005-in.

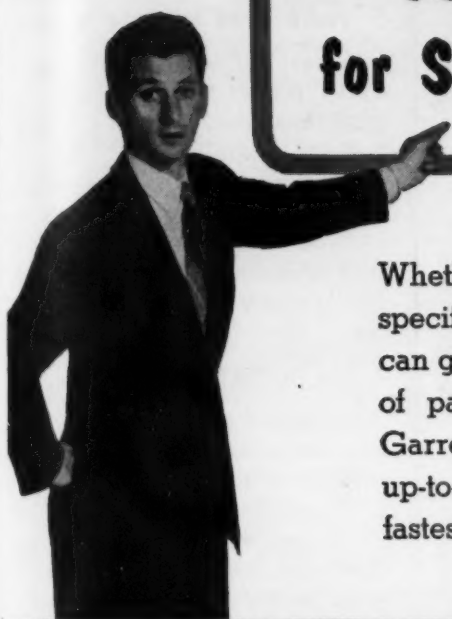
BUFFING:

Spray gun mover simplifies application of compound.

A hydraulically-operated device for applying surface finishing compounds to wide faced buffs has been developed by Clair Mfg. Co., of Olean, N. Y. This machine will operate efficiently on any standard surface finishing machine, it is claimed.

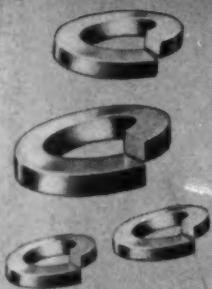
In operation, the spray gun mover completes one spray pass each time the operator touches the foot control. The equipment is available in a variety of sizes—the largest permitting a coverage of from 2 to 40 in. A single gun covers the entire width.

YOU CAN'T BEAT GARRETT for SMALL PARTS and SERVICES



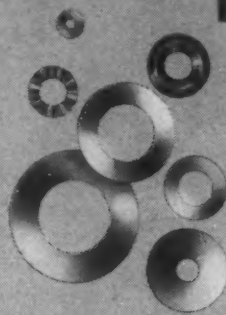
Whether they are small or medium size parts to regular specifications or special sizes and finishes . . . Garrett can give you quick deliveries. Garrett's stock of billions of parts make most deliveries possible from stock. Garrett's three modern plants equipped with the most up-to-date, precision automatic machines provide the fastest service on parts to your special specifications.

SPRING LOCK WASHERS



Complete line of high quality spring lock washers to ASA and SAE specifications, plus many special types . . . wide choice of metals plated to your requirements.

FLAT WASHERS



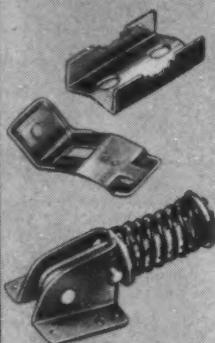
Fast delivery from the most complete line of washers in the world. Precision made in thousands of different sizes and types—all standard and many semi-standard sizes. Ready for delivery from stock to you.

HOSE CLAMPS



Aircraft AN 737 Stainless steel radial type. Multi-Clamp (QS100 & AN 748) worm type screw hose clamp. Auto-Seal, the inexpensive high quality hose clamp.

STAMPINGS



Quick deliveries on small and medium stampings made to your specifications on high-speed precision production presses. Finished, tumbled and plated to your specifications.

Write today for the Garrett catalog and technical data on these products.

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GEORGE K. GARRETT COMPANY, INC.

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OF PHILADELPHIA

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REDUCE CYLINDER HANDLING

Up to 50% with INDEPENDENT Gas Supply Trailers!

Here's the newest idea in gas service! Leave a full gas trailer with your customer . . . replace it with another when empty. Reduces cylinder handling up to 50% . . . cuts cylinder costs . . . gives customers the convenience of having uninterrupted gas supply.

Many gas manufacturers and haulers of compressed gas (including many government agencies), are already enjoying the many advantages of INDEPENDENT Gas Supply Trailers.

Available for all gases as authorized by ICC.



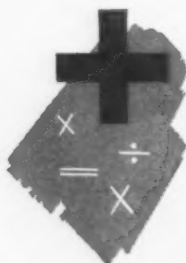
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Your
Inquiries*



Everyone knows this
is a plus sign...

And smart gear users know
this  is the sign of
the best in custom made gears.



"Gears... Good Gears Only"

THE CINCINNATI GEAR CO. • CINCINNATI 27, OHIO

HANDLING:

Revolving fork simplifies
removal of machine turnings.

Removal of turnings from automatic screw machine collection boxes has been simplified with a fork truck equipped with a hook type revolving fork. The equipment, used by a manufacturer of business machines, has helped reduce labor costs for this operation, and resulted in better housekeeping.

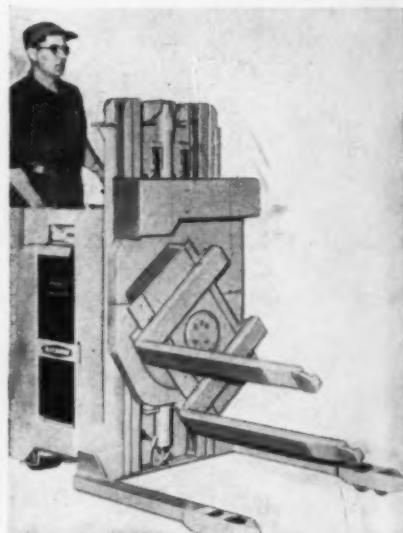
Designed for Narrow Aisle

Automatic screw machine turnings are collected in tote boxes beneath the machine. As the boxes filled, it was necessary for a worker to reach beneath the machine for the tote box, place it on a floor truck, push it to the cutting oil collecting centrifuge machine and return the empty container for reuse.

By using a fork truck designed for narrow aisle operation and equipped with special hook type revolving forks this problem has been eliminated. The truck is driven up to the machine, the fork hooks engage the box handles and pull it out from beneath the machine.

Weld Channels On Boxes

The hooks are disengaged by lowering the forks which are then driven into channels welded on the bottom of the tote boxes and elevated for traveling.



Fork revolves ...

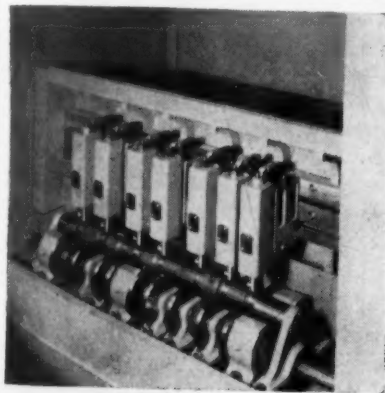
HEAT TREAT:

Machine quench minimizes distortion in quenching

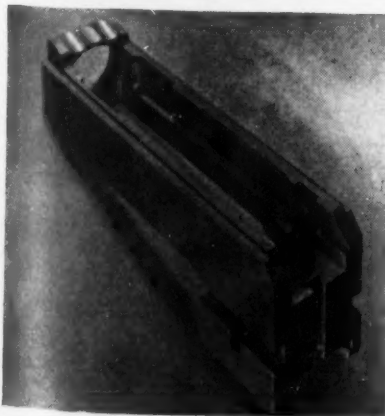
Machines designed to hold and align heated round, flat, shafted or irregular parts during quenching achieve accurate hardening with a minimum of distortion.

In a series of quenching presses designed and built by the Gleason Works, Rochester, N. Y., the quenching cycle is controlled and automatic. Oil is forced uniformly over and around the heated part. The rate of flow can be accurately controlled at all stages of the quenching cycle. Initial quench, is rapid until the critical point of hardening is passed, then a slow quench allows the temperature to equalize and to cool the material without internal stresses. Finally, a rapid cooling quench is used.

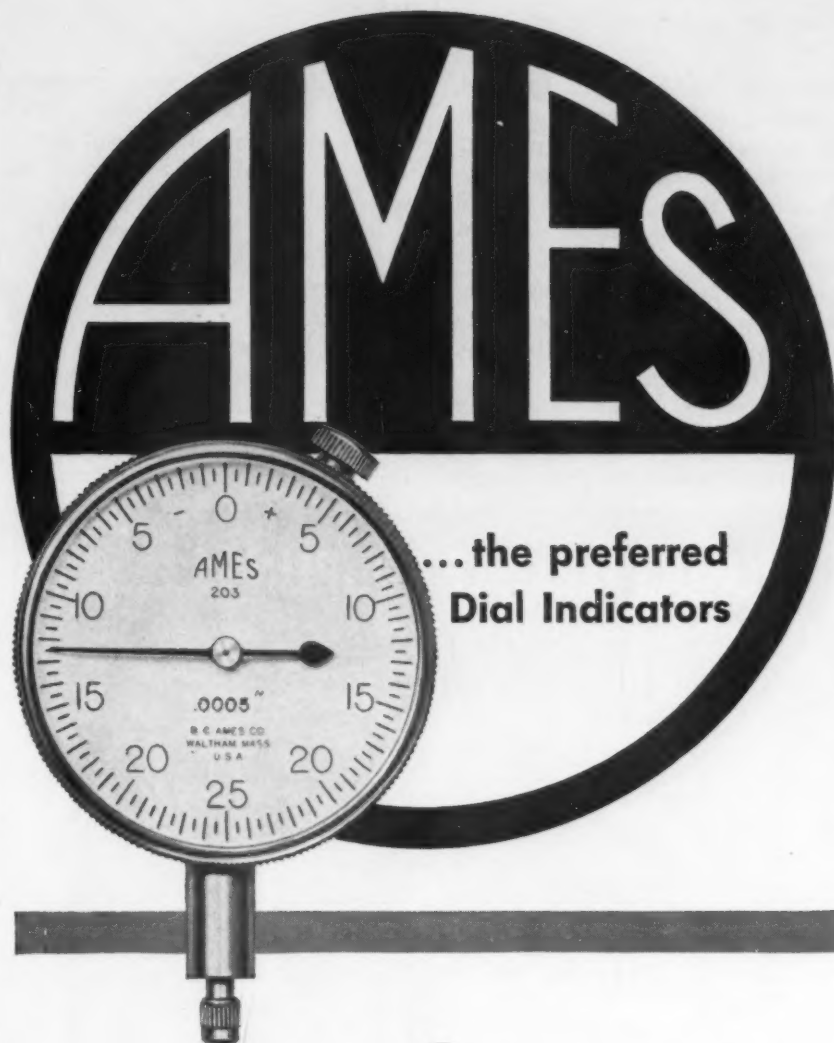
A built-in pumping system and oil reservoir, reduces the external oil requirements to a minimum. Water, caustic soda, or other



Shaft rolls in quench . . .



Distortion minimized . . .



**... the preferred
Dial Indicators**

One of America's largest and most famous mass-producers recently chose Ames as preferred source of supply for indicator gauges.

The reasons behind this decision are the very reasons why you should standardize on Ames dial indicators and dial gauges:—the Ames "Hundred Series" indicators available in four sizes, fit every measuring requirement; they are *accurate, sensitive, low in friction, yet are rugged and tough*—give more on-the-job time. All Ames products embody latest design and highest-quality materials; they are manufactured by methods and machines that are *exclusive* with B. C. Ames Co.

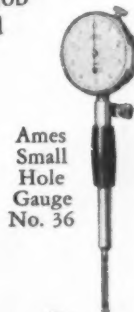


Ames
Dial Depth Gauge
No. 11C



Ames
Dial Micrometer
No. 517

Ames
Amplifying
Dial Comparator
No. 26



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Small
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Mfr. of Micrometer Dial Gauges • Micrometer Dial Indicators

quenching mediums can be used.

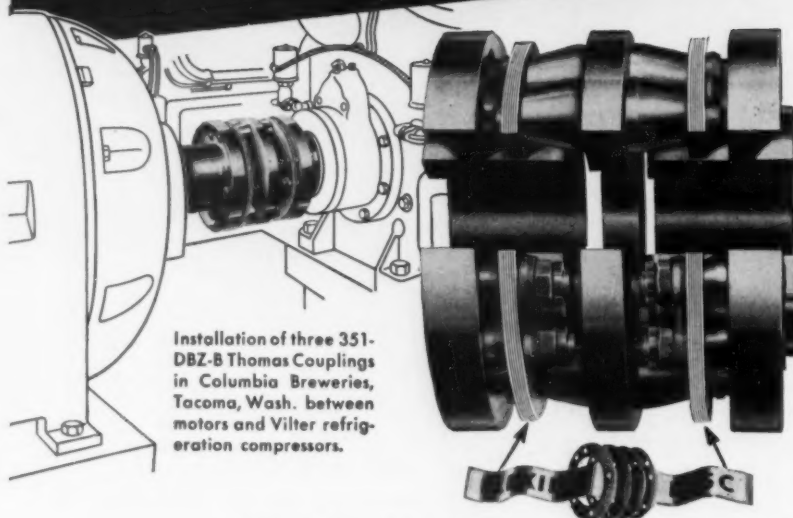
Presses for flat, round and irregular parts are available in three sizes to accommodate parts up to 36 in. In these the part is held between two dies during quenching.

Ring parts are held round and concentric by the expansion of an assembly of segments within the bore or by contraction on the outside diameter. For quenching shafts or similar parts, the ma-

chine rolls the part under pressure during the cycle. Pressures, preset by the operator, are automatically controlled. The direction of flow of the quenching fluid, and the volume, up to 350 gpm, can be adjusted for each job.

The machine will handle shafts or other similar parts from 9/16 to 4 in. in diam, and from 6 to 43 in. long. Parts with integral gears, cams or shoulders up to 8 in. in diam can be accommodated.

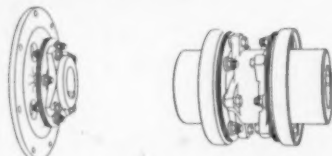
THOMAS FLEXIBLE COUPLINGS... for more years of better service!



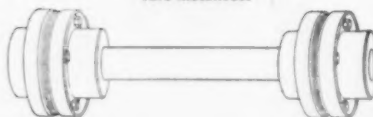
Installation of three 351-DBZ-B Thomas Couplings in Columbia Breweries, Tacoma, Wash. between motors and Vilter refrigeration compressors.

Patented Flexible Disc Rings of special steel transmit the power and provide for parallel and angular misalignment as well as free end float.

DISTINCTIVE ADVANTAGES	
FACTS	EXPLANATION
NO MAINTENANCE	Requires No Attention. Visual Inspection While Operating.
NO LUBRICATION	No Wearing Parts. Freedom from Shut-downs.
NO BACKLASH	No Loose Parts. All Parts Solidly Bolted.
CAN NOT "CREATE" THRUST	Free End Float under Load and Misalignment. No Rubbing Action to cause Axial Movement.
PERMANENT TORSIONAL CHARACTERISTICS	Drives Like a Solid Coupling. Elastic Constant Does Not Change. Original Balance is Maintained.



Thomas Couplings are made for a wide range of speeds, horsepower and shaft sizes and can be assembled or disassembled without disturbing the connected machines, except in rare instances.



Write for our new Engineering Catalog No. 51A

THOMAS FLEXIBLE COUPLING COMPANY
Largest Exclusive Coupling Manufacturer in the World
WARREN, PENNSYLVANIA, U.S.A.

NEW BOOKS:

"Industrial Pensions," by C. L. Dearing. Book explores aspects of new pension arrangements, examines basic economic principles and facts which underlie industrial pensions, considers in detail the limitations of existing programs, and offers a new basis on which private and public policies can be formulated. The Brookings Institution, Washington 6, D. C. \$3.75. 310 p.

"Das Giessereiwesen in Gemeinschaftlicher Darstellung," by H. Schmidt. Reviewed by W. Trinks, Professor Emeritus, Carnegie Institute of Technology. Book deals with every phase of foundry work from early history to finished modern castings.

Some subjects covered include: The making of patterns; materials for molds and cores; drying of molds and cores; fuels used in the foundry; raw materials for iron and steel; raw materials for non-ferrous metals; raw materials for light metals. Book is a condensed encyclopedia of metal-founding. Giesserei Verlag, Dusseldorf, Germany. \$5.70. 349 p.

"Forming and Bending Aluminum," Presents comparative material on different types of forming equipment. Offers engineers specific data on aluminum characteristics. Outline practical forming and bending procedures. Kaiser Aluminum & Chemical Sales, Inc., 919 North Michigan Ave., Chicago. 260 p.

"Lubrication of Industrial and Marine Machinery," by W. G. Forbes, revised by C. L. Pope and W. T. Everitt. Second Edition. Evaluates information basic to an engineer's understanding of lubricating systems. Interprets in detail the chemistry, refining, compounding and specifications and limitations of lubricants. John Wiley & Sons, Inc., 440 Fourth Ave., New York 16. \$6.50. 351 p.

"Comparative Bridge Designs," edited by J. G. Clark. Book contains a selection of the information and material presented in the 1952 James F. Lincoln Arc Welding Foundation program and includes designs submitted in this program, placing emphasis upon the saving of steel. The James F. Lincoln Arc Welding Foundation, Cleveland 17, Ohio. \$2.00. 211 p.

"ASTM Standards on Engine Antifreezes." Publication includes all ASTM methods of test pertaining to engine antifreeze. American Society for Testing Materials, 1916 Race St., Philadelphia 3. \$1.25. 48 p.

STATISTICS:

Punch card data transmitted over ocean at high speed.

Statistical information was radioed directly from one punched card to another recently by the U. S. Air Force from Port Lyautey, near Casablanca, Morocco, across 3000 miles to Washington, D. C.

During an experimental transmission lasting a week and observed by Army and Navy representatives, information was sent between these two points, in both directions, at a speed of approximately 1000 characters a minute by a data transceiver, a new machine introduced recently by International Business Machines Corp.

Fast and Accurate

Air Force officials say this method is faster, more accurate and economical than any previous system of transmitting detailed punched-card data between bases.

With the cooperation of the U. S. Navy which made its radio circuits available, the transmission was sent between the Naval Communication Facility, Port Lyautey and Washington.

The information originated at the North African base, where a machine operator loaded a data transceiver with IBM cards containing statistical information recorded as punched holes in the cards.

As it read the cards, the data

transceiver generated electronic impulses, each series of impulses representing a hole in the card. These impulses sent by radio across the Atlantic, actuated the punching mechanism of the data transceiver in Washington which simultaneously created duplicates of the cards placed in the machine at Port Lyautey.

Last month similar radio experi-

ments were conducted for a week between Andrews Air Force Base, Maryland, and Pepperrell Air Force Base, near St. John's Newfoundland.

The Air Force tests were observed by representatives of the Army and Navy. Army officials state that they are considering the utilization of the machines for transmission of supply data.

Do a THOROUGH Cleaning Job...

On CHIPS and SOLID DIRT As Well As OIL and GREASE!



Effective, low-reject finishing and plating depend on the removal of stubborn chips, abrasives and other *insoluble* dirt, just as much as on cleaning away oil and grease. Degreasing operations do only part of the cleaning job. Make it a

"One-For-All" Operation

Use the one cleaning machine that provides *mechanical* scrubbing action to augment the solvent and chemical action of the cleaning solution. The Magnus Aja-Lif Cleaning Machine gives you a vigorous shearing and scrubbing action on solid dirt

particles, as it moves the work up and down in the solution many times a minute. Each time the direction is changed, the cleaning solution shears away more insoluble chips, abrasives and other particles. You get really clean work.

The Fastest Cleaning There Is

It's thorough... and it's *fast*—unbelievably fast. Aja-Lif cleaning—with any cleaning solution—is two to ten times faster than any other method. And as to man-

power... it's a less than one man operation, because the operator can do other work while the machine automatically cleans.

For complete information, write for Bulletin 703-AL—or ask for a demonstration on your own work.



MAGNUS CHEMICAL CO., INC.

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Built for **SEVERE DUTY**

**frequent starting • inching •
reversing • dynamic braking**

ALLIS-CHALMERS

Type 256

AIR CONTACTOR

**FOR 2300 TO 5000-VOLT
MOTOR CONTROL**

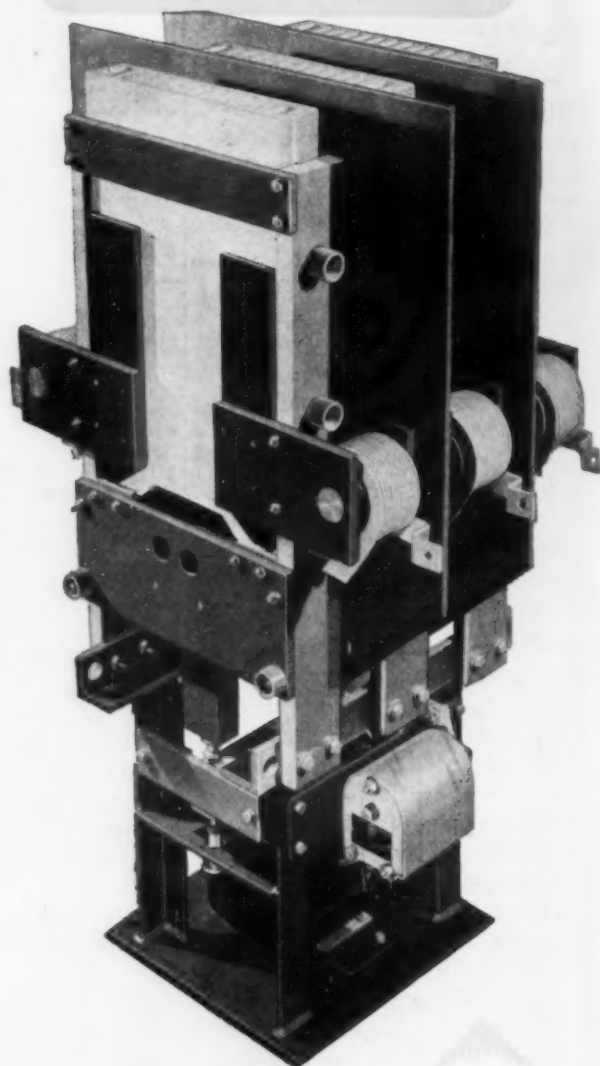
Durability and long-term dependability were given prime consideration in the design of the Allis-Chalmers Type 256 air-break contactor. As a result, the roughest repetitive duty becomes routine — contact operations are actually numbered in the millions with a minimum of servicing.

DESIGN FEATURES

By utilizing a simple vertical motion and double break contacts, troublesome maintenance factors, such as mechanical linkages, turning shafts, shaft bearings and flexible leads, have been eliminated. From the operation standpoint, two gaps in series cut arc voltage in half. Rapid arc extinction is further facilitated by magnetic blowouts at each gap, operating with arc chutes designed to take full advantage of dual blowouts.

In Allis-Chalmers Type H high voltage starters, Type 256 air-break contactors — along with meters, overload relays, current limiting fuses, auxiliary switches — are coordinated to meet heavy duty demands — to provide high capacity interruption and complete protection for man, motor and machine. For complete information see your nearby A-C representative, or write Allis-Chalmers, Milwaukee 1, Wisconsin. Ask for bulletins 14B6410B and 14B7303.

A-4325



ALLIS-CHALMERS

NEW EQUIPMENT

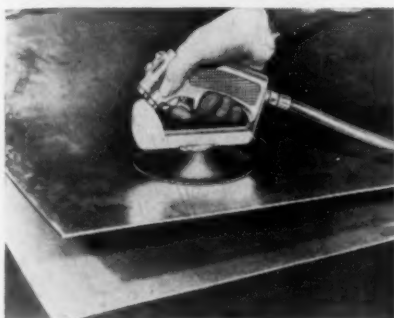
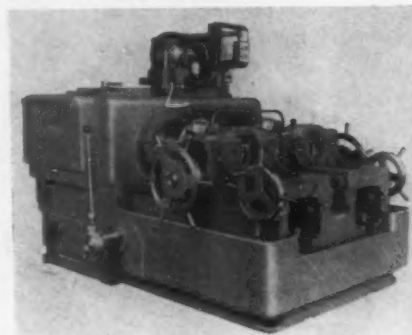
New and improved production ideas, equipment, services and methods described here offer production economies... for more data use the free postcard on page 131 or 132

Heavy duty machine for threading large diameter pipe

For the production threading of large diameter pipe and nipples a new double spindle threading machine features a 1 to 4-in. pipe range if equipped with the 4-in. Lanco head or a 2½ to 6-in. pipe range if furnished with the 6-in.-6 chaser Lanco threading head. Both heads are equipped with a reamer and reamer attachment to ream,

chamfer and thread the pipe in a simultaneous operation. The reamer also acts as stop bar for the die-head internal trip mechanism providing uniform thread length regardless of variations in pipe length or in the gripping position. Twelve spindle speeds range from 9 to 152 rpm. *Landis Machine Co.*

For more data circle No. 30 on postcard, p. 131.



Sheet lifter produces vacuum from compressed air

As long as the trigger in the pistol grip type handle of the Pres-Vac Lifter is held down, the suction cup will pull 11 psi. This constant, positive lifting power is produced by passing compressed air through the venturi at 45 psi, creating a constant vacuum of 22 in. of mercury. The vacuum is conveyed to

the rubber cup through passages in the handle. A regulator is supplied to reduce the line pressure to 45 psi. The work of lifting is speeded up and made easier, resulting in increased savings and safety in warehouse and production line operations. *F. J. Littell Machine Co.*

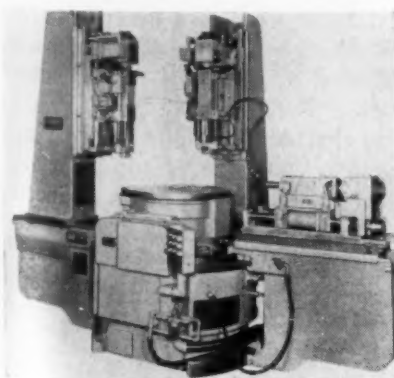
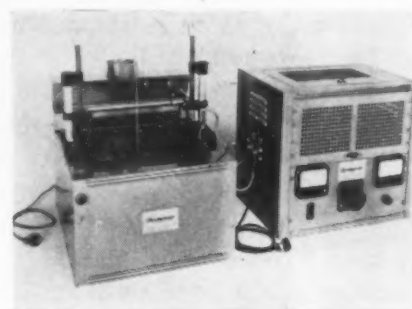
For more data circle No. 31 on postcard, p. 131.

Deposits bright chrome at 0.002 in. per hour

Designed for a wide range of applications with smaller components and tools, the Model 75 Chromplater will deposit a bright, hard chrome plate as fast as 0.002 iph on areas up to 25 sq in. The hard chrome plating solution used eliminates need for bath adjustment or maintenance throughout long life of the

solution. The unit is a complete package, simple to install and operate. It contains a 13x13x11 in. deep tank, exhaust hood, adjustable work platform and thermostatically controlled electric heater. All types of metal may be plated, including sintered carbides. *Dawson Corp.*

For more data circle No. 32 on postcard, p. 131.



The user can create own single purpose machine

Designed to provide a standardized basic machine accurate enough for aircraft parts and rigid enough to hold tolerances in heavy work, a fully automatic universal drilling machine accommodates up to four drilling or tapping units. All are quickly adjustable radially, vertically and circumferentially. This and easily changeable cams for programming control allows quick con-

version to meet engineering changes and the obsolescence of parts with but one original machine investment. Air-hydraulic heads will drill up to ¾-in. holes in mild steel, ½ in. in stainless steel. Spindle speeds range from 180 to 6700 rpm; feeds from ½ to 40 ipm. *Hartford Special Machinery Co.*

For more data circle No. 33 on postcard, p. 131.

Turn Page



A simple case of engineering brawn over spawn

Canning salmon can be a darned expensive operation. First, you've got to clean 'em, cut 'em up to size, put 'em in the can. Then you add just the right amount of salt and oil, and put the cover on.

That's when the lid usually blows off your manufacturing costs. And that's where one well-known canner invited Taft-Peirce to help them out.

Taft-Peirce engineers worked with this company to design and build a conveyor fed machine that does the last three operations automatically. Measures out the salt and oil and seals the cover on. The result — a more uniform product at lower cost.

Perhaps Taft-Peirce engineering skills can help you cut costs, too. As a starter, send for our 92 page illustrated booklet, "Take It To Taft-Peirce."



For
Engineering
Tooling
Contract Manufacturing

TAKE IT TO TAFT-PEIRCE

The Taft-Peirce Manufacturing Co., Woonsocket, R. I.
TELEPHONE, WOONSOCKET 1

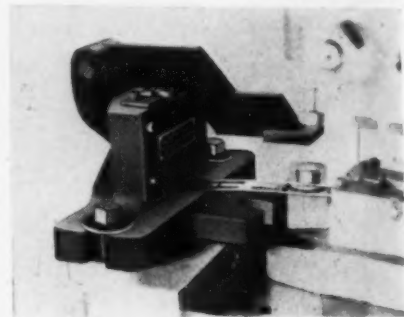
Paint stripper

Strypp-Away, a new heavy duty, liquid stripper removes tough, modern finishes such as Epons and other chemically resistant finishes. It may be used directly from the container or diluted with water depending on the job to be done; will hold up for long periods of heating without loss of strength and may be used at temperatures as high as 220°F. Heated to 200°F, Strypp-Away has removed Epon varnish in 15 min. *DuBois Co., Inc.*

For more data circle No. 34 on postcard, p. 131.

Scrap chopper

New scrap chopper clamps to any press bed and handles steel up to 3 in. wide to 0.062 in. thick. It is powered by the press ram; is inde-



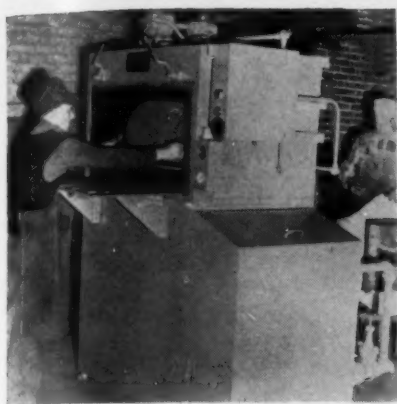
pendent of the die. Spare blades can be installed quickly when cut-off blade needs sharpening. Tool is rugged and built for long service. *Jaco Devices, Inc.*

For more data circle No. 35 on postcard, p. 131.

New cutting material

New carbide cutting material which contains no tungsten and no cobalt has a titanium carbide base in place of tungsten carbide. Nickel is used as a binder instead of cobalt and molybdenum carbide is used as an alloy carbide addition. The tungsten free grades are characterized by high wear resistance and the cratering action of steel chips is greatly reduced. Tool life is said to be excellent on steady finishing cuts, particularly when high speeds and fine feeds are employed in machining hard abrasive steels. *Firth Sterling, Inc.*

For more data circle No. 36 on postcard, p. 131.



Combination tumbling-rocking washing machine

A drum cabinet model washing machine uses a tumbling mesh drum for small stampings and a rocking cradle that will hold baskets of machined parts. These may be used alternately. After the drum or baskets containing work to be cleaned are placed in the machine, the operator closes the door, turns the timer to the desired spray time and the pump starts spraying detergents at high pressure. While

the spray is in operation the drum rotates, tumbling the work and exposing all areas to the detergent. When baskets are used they are rocked back and forth with the same result. A clear spray rinses off the detergent. The machine is compact, measuring 4½ ft long x 4 ft wide x 7 ft high. It is heated by gas; can be made for steam heat. *Industrial Washing Machine Corp.*

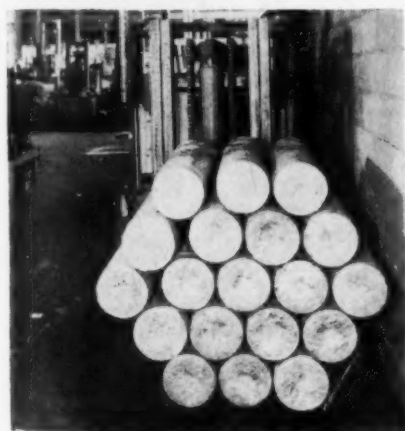
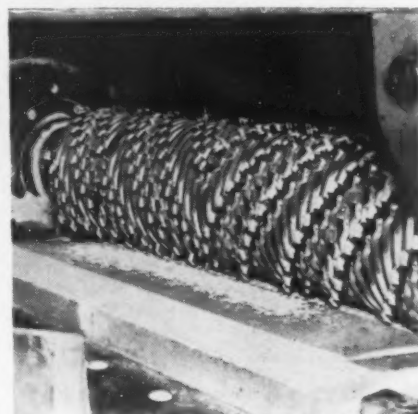
For more data circle No. 37 on postcard, p. 131.

Carbide cutters mill abrasive plastics at 19 ipm

Carbide milling cutters are outlasting other cutters by as much as 35 to 1 on one of the most abrasive plastics used by industry, at the Switchgear Dept. of General Electric in Philadelphia. Approximately 115 pieces of plastic (composed of 60 pct zircon sand, 30 pct asbestos, 5 pct talcum and 5 pct phosphoric acid) used on arc chutes are run through the milling machine before the Carboloy carbide tips re-

quire maintenance. Two milling machines are used in the operation. Both are equipped with Carboloy grade 905 carbide. The first, with 198 cutters, cuts 50 slots. The second, with 300 cutters, cuts 100 slots. The plastic is fed at 19 ipm, and the cutters turn at 126 rpm. The carbide teeth are set with a 10° radial rake angle. *Carboloy Dept. of General Electric Co.*

For more data circle No. 38 on postcard, p. 131.



Combination clamp handles aluminum ingots and pigs

An attachment that eliminates pallet handling of aluminum pigs and ingots is designed to handle the pigs singly or stacked. To accomplish dual operation, the clamp has a side shifting feature that operates through the use of a solenoid switch. Forks are offset to provide maximum opening required. For handling steel strapped ingot bundles, triangular shaped sleeves are slipped over the forks and secured

by keeper pins. Shape of these sleeves conforms to shape of the ingot load. Lateral travel of forks permits 17-in. side-shift of load. Maximum opening between forks is 41 in. and they can be operated independently of each other. Clamping and side shifting motions are hydraulically actuated and controlled from the operator's position. *Yale & Towne Mfg. Co.*

For more data circle No. 39 on postcard, p. 131.

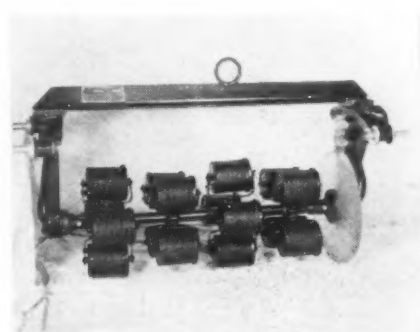
Plating small well separated batches made possible

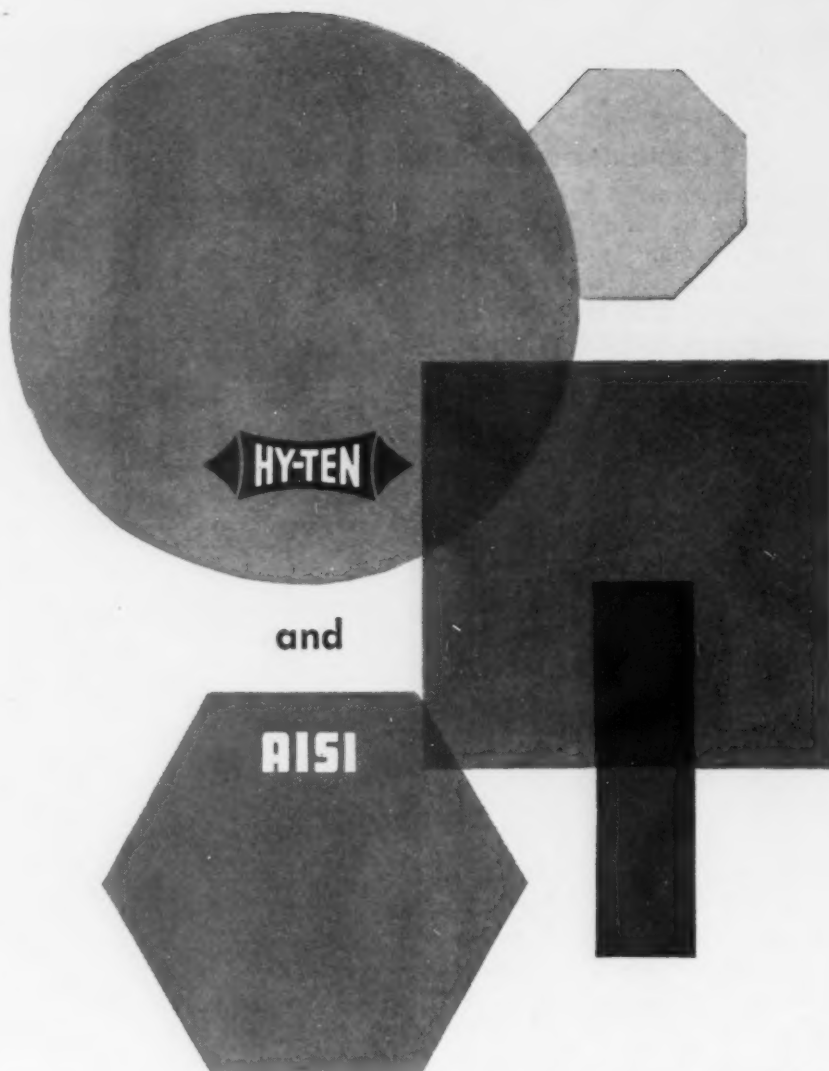
For plating small parts and types which cannot be mixed a Cluster Barrel solves the problem. It provides a rotary rack to hold small containers with the proper constant current conducted to each container. On a shaft, rotated by large ring gear, are mounted four spoke arrangements. These carry perforated steel plastisol covered con-

tainers held in place by spring clips which also hold the removable lid in place. Each container has a built-in disk type cathode contact making it a complete unit in itself. The Cluster Barrel with its bail type superstructure can be used in the standard plating barrel. *Udylite Corp.*

For more data circle No. 40 on postcard, p. 131.

Turn Page





bars, billets and forgings in sizes, shapes and treatments for every need!

Wheelock, Lovejoy & Company, Inc., can fill your alloy steel requirements promptly. This applies to both standard AISI and SAE steels and to our own HY-TEN steels—"the standard steels of tomorrow". Take advantage of our seven strategically located warehouses. All of them can supply these steels in the form and quantity you need. Every warehouse, too, is staffed with expert metallurgists who are ready to serve you.

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WHEELOCK, LOVEJOY & COMPANY, INC.

126 Sidney Street, Cambridge 39, Mass.

NEW EQUIPMENT

Reduces tooling costs

Known as the Power-Di press unit, a new 1-ton press reduces tooling costs by eliminating the need for die sets. Punches and dies of any shape may be mounted in retainers which are automatically aligned in opposing ram and bolster members. Several of these units can be set in series for simultaneous piercing,



notching or forming operations on large sheets which otherwise would require the use of much larger dies and punch presses. Ease of operation with full access to the work area by the operator reduces fatigue. Standard stroke is 1 1/4 in.; shut height, 3 to 6 in.; 200 strokes per minute. *Swanson Tool & Machine Products, Inc.*

For more data circle No. 41 on postcard, p. 131.

Anchoring medium

Garonite, a fast setting cement, has been developed as an anchoring medium for any type of machinery or concrete installation, including heavy-duty vibrating equipment. It is applied cold by adding water. Speed of setting permits use of machines in 30 min to 1 hr, depending on size and weight. At 1 hr compression strength is guaranteed to exceed 5000 psi, increasing to more than 12,000 psi full strength. Shrink-proof union between bolt and base assures permanent, trouble-free anchorage. Garonite can be used for patching concrete floors. *Garon Products Co.*

For more data circle No. 42 on postcard, p. 131.

Turn Page

DRAWING BRASS

RADIATOR TANK made of Formbrite shown before polishing and after chromium plating. Halves are assembled with a lock seam and soldered together with baffles inside. Intake spout, overflow tube and connecting fitting are also attached.

New fine-grain drawing brass cuts rejects from 13% to under 1%

These radiator tanks—used in a leading sports car—were first made of ordinary drawing brass.

But Morrison Steel Products Company, Buffalo, N. Y., found this brass wasn't stiff enough after forming. During handling, polishing and plating, many dents and nicks appeared on the surface. Rejects ran at about 13%.

Then Morrison turned to Formbrite® — Anaconda's new fine-grain drawing brass. Here's what happened.

1. Rejects dropped to less than 1%.
2. Appearance of the final plated tank (very important in a sports car) was so much improved that now Formbrite is specified for all these tanks.
3. Polishing costs were sliced almost in half.

WHY MORRISON FOUND FORMBRITE BETTER, CHEAPER TO USE
Formbrite has a superfine grain. Pro-

duced by special methods of rolling and annealing, this grain is so fine that often a simple color buff brings it to a bright, lustrous finish. (Compare magnification of Formbrite Drawing Brass with that of ordinary drawing brass. At right.)

Formbrite is harder, stiffer, springier and more scratch-resistant. It resists denting and deforming. Yet Formbrite is surprisingly ductile . . . readily stamped, formed, drawn and embossed. And Formbrite plates beautifully.

NO EXTRA COST

Premium price for this premium metal? Not at all. Formbrite costs not a penny more than ordinary drawing brass. It comes in sheets, strips and coils—in all commercial widths and gages.

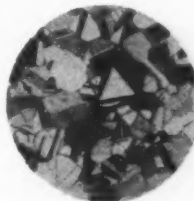
FREE SAMPLE

The way to find out about Formbrite is to try it yourself. Ask for a sample

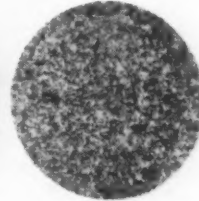
and more information. Just write to:
The American Brass Co., Waterbury 20, Conn. In Canada: Anaconda American Brass Ltd., New Toronto, Ont.

*Reg. U. S. Pat. Off.

5487



75x magnification of ordinary drawing brass.



75x magnification of superfine-grain Formbrite.

Formbrite

FINE-GRAIN DRAWING BRASS
an ANACONDA® product

Made by
THE AMERICAN BRASS COMPANY

Cut Production Time and Costs



A Production Worker on the Bench Who is Never on Your Payroll!

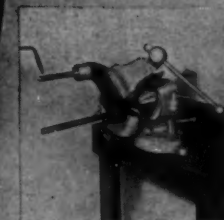
with **FLEXIVISE**

A revolutionary development that saves time, labor and fatigue. Provides complete rotation of 360° in any direction. Positions work to the operator, saving time, labor and physical fatigue. Flexivise is exactly what the name implies; a flexible vise providing a greater range and greater efficiency. 4" jaw width, 5½" jaw opening. Write or wire now for complete information.

FLEXIVISE COMPANY

1149 E. Pico Blvd., Los Angeles, Calif.

Special FlexiSleeve provides a vertical rotation.



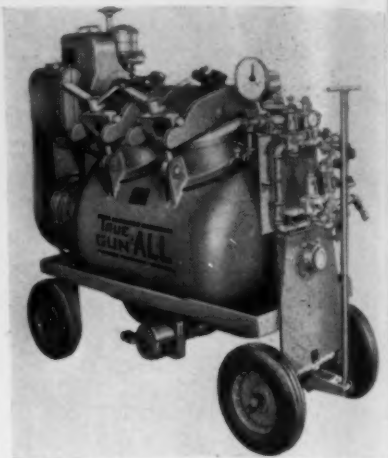
Work can be rotated a full 360° and locked in any position.



Large unwieldy pieces can be held securely by Flexivise.

Refractories application

Refractories can be satisfactorily applied by pressure gunning using True Gun-All equipment because it uses a wet mix. The materials are thoroughly blended in dual tanks, mixed with an exactly measured



amount of water for proper consistency. The complete mix assures perfect adhesion and it is further homogenized by controlled air-action in the gun. With True Gun-All, texture is even without dry spots and there is less rebound loss. True Gun-All Equipment Co.

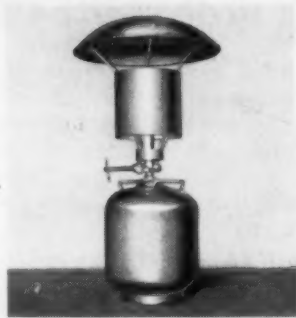
For more data circle No. 43 on postcard, p. 131.

The **NEW** Weldit L-P Portable HEATERAMA SALAMANDERS



◀ **NO. 800** Weldit Salamander, Floor-type model. Height 22", Width 19", Weight 13 lbs. Operates off any Standard L-P Tank.

▶ **NO. 850** Weldit Salamander Tank Top Model. Height 20", Width 19", Weight 14 lbs. Operates off any L-P Tank equipped with Tank Top Valve.



New design, new efficiency and new economy is yours now with the Weldit L-P Heaterama Salamander.

This Weldit Heater is the end result of over two years experimental work by Weldit Engineers. It is designed to give maximum high heat output at low cost, requires no priming or pumping, positive control, no smoke or soot, generates heat fast, portable, rugged construction assures long life, fabricated of steel and cast iron. Priced right.

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CANADIAN DISTRIBUTORS—ALLOY METAL SALES—881 Bay St., Toronto 5, Ontario, Canada

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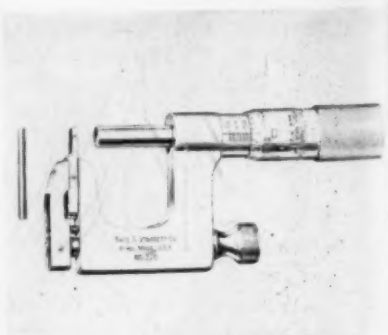
WELDIT, INC., 990 Oakman Blvd., Detroit 38, Michigan
Gentlemen: Please mail me your new folder on the new Weldit Heaterama Salamanders and your L-P Equipment.

Name _____
Company _____
Address _____
City _____ Zone _____ State _____

Write for free folder today.

Interchangeable anvils

New Mul-T-Anvil micrometer permits quick, accurate measurement of tubing, cylindrical walls, from holes or slots to an edge and in hard to reach locations. It is used



with standard or special anvils which can be changed quickly and locked rigidly with a simple lock screw adjustment. The micrometer has a range of 0 to 1 in. by 0.001 in. L. S. Starrett Co.

For more data circle No. 44 on postcard, p. 131.

NOW VICTOR "MOLYFLEX" HIGH SPEED STEEL BLADES

for
power
sawing

Here's the newest
Victor Power Blade
—a blade that is
break-resistant for
safety and economy.
A blade that offers
moly high speed
performance at no
premium cost.

WHAT MAKES IT EFFICIENT

TOOTH HARD —
FOR MAXIMUM
SPEED AND WEAR

BACK SOFT —
FOR FLEXIBILITY

Victor heat
treating know
how producing
graduated hardness.

No matter what your metal-cut-
ting problem, there's a VICTOR
Blade for the job. Competitively
priced.

Call your nearby Industrial Dis-
tributor for VICTOR Blades—and
for hundreds of the other items you
need to keep production running.
Sold Only Through Recognized Distributors



SAW WORKS, INC. • MIDDLETOWN, N.Y., U.S.A.
Makers of Hand and Power Hack Saw Blades;
Frames; Metal & Wood Cutting Band Saw Blades.

NEW EQUIPMENT

Carrier amplifier

A four channel carrier amplifier has
a flat frequency response from 0 to
3000 cycles, a frequency range said
to be three times that found in
similar instruments. Industries,
especially in the aircraft, guided
missile, and atomic energy fields,
will find the amplifier system useful

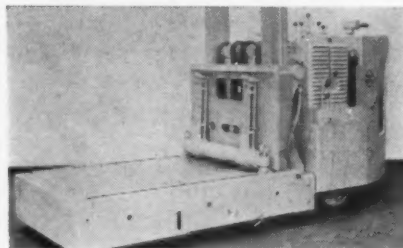


for reproducing outputs of resis-
tance or reluctance type trans-
ducers in the frequency range of
0-3000 cycles. Amplifier accuracy
is ± 1 pct. The instrument will
operate on line frequencies of 50,
60 and 400 cycles, and voltages 105-
125 ac. Ambient temperature range
is -20° to 50°C . Consolidated En-
gineering Corp.

For more data circle No. 45 on postcard, p. 131.

Die pullers

New line of die pullers with ca-
pacities ranging from 10,000 to
100,000 lb is designed for use in
automotive, aircraft, and other
stamping and forging plants using
heavy presses. Hydraulic lift and
hydraulic push-off units permit



inching action. Hydraulic valves
can be barely cracked to permit ac-
curate positioning of the platform
and aligning of the die in the press.
Each of the two pusher arms can be
operated independently or simul-
taneously to permit accurate ma-
neuvering of the die into position.
Elwell-Parker Electric Co.

For more data circle No. 46 on postcard, p. 131.

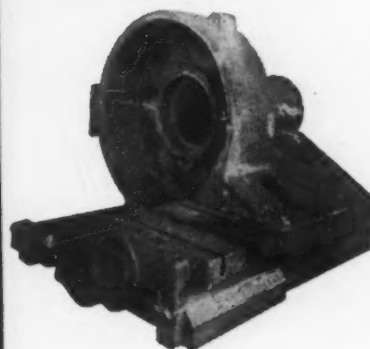
Turn Page

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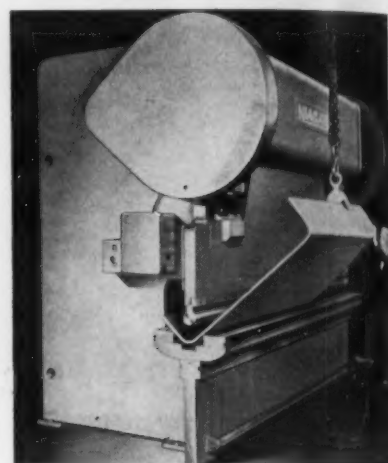
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Almost limitless is the scope of forming, bending, punching, blanking and related operations claimed for a newly-designed line of press brakes. To assure uniform bends with straight-edge accuracy, double end twin drives with double reduction gearing provide uniform, constant application of power in all models. Rugged, streamlined frames feature box type crowns to provide maximum resistance to deflection and permanent alignment of



bearings and ram. Laminated non-metallic ways reduce wear to a minimum. All gearing is totally enclosed in sealed oil baths for thorough, clean lubrication. Extensive line of press brake dies is available for use with these 50 to 775-ton press brakes. *Niagara Machine & Tool Works.*

For more data circle No. 47 on postcard, p. 131.

Non-etching Al cleaner

Aluminum cleaner NE-6 is mild in alkalinity, does not etch metals either at the air interface or in contact with other metals, and possesses very high detergency. It is claimed to have ability to disperse oils and to remove marking ink and crayon normally present on aluminum sheet. The cleaner is recommended for cleaning cast and wrought aluminum prior to anodizing, chromate treatments, organic finishing, resistance welding and plating by the nonetching process. Normally used in concentration range from 6-8 oz per gal. *Enthone, Inc.*

For more data circle No. 48 on postcard, p. 131.

NEW EQUIPMENT

Industrial cooler

This industrial cooler was designed for the freeze treatment of metals. Quick draw-down of temperature to -100°F is achieved with the Conrad cascade system. Safe Freon 13



and Freon 22 are used so the industrial cooler can be located in any area with complete safety for workers. The chambers continue the cooling of steel under treatment especially in tools, gages, and dies to temperatures of about -120°F so that relatively soft elements in the steel are transformed to hard strong constituents. *Conrad, Inc.*

For more data circle No. 49 on postcard, p. 131.

Spiral hone

The overlap feature of the stones in this spiral hone allows the hone to work efficiently on interrupted surfaces such as rifled gun bores and longitudinally grooved cylinders, either automatically or man-



ually. Experimental runs have indicated that stock removal at the rate of 0.002 to 0.005 ipm on large bores is possible, making the tool a prime stock remover. Head sizes range from 3 in. upward. Automatic sizing is accomplished by Sheffield Precisionaire or standard sizing ring. *Spiral Hone Corp.*

For more data circle No. 50 on postcard, p. 131.

A-1033

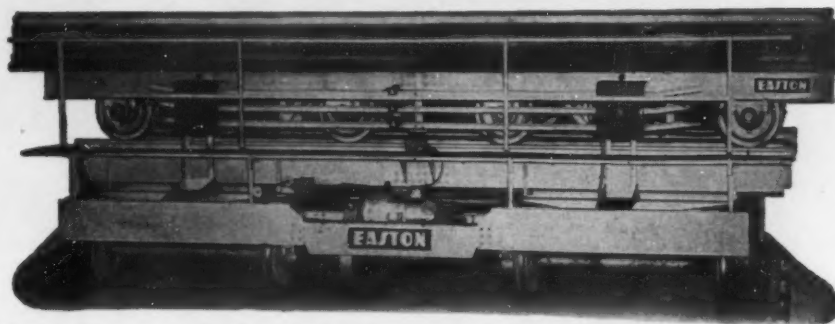


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- **TROUBLE-FREE** . . . combination of structural strength of steel and protective qualities of nickel assures positive life long protection with minimum maintenance.
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Names of LECTRO-CLAD users on request.



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229 Main Street
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It gets its fuel through 1/4" tubing at pressures up to 1,700 psi

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Superior Tube supplies metal gullets through which such landscape levelers gulp their fuel.

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The Iron Age SUMMARY . . .

**Steel producers encouraged by sales reports promising pickup in orders
. . . Ingot rate holds steady at 64.0 pct of capacity.**

Pickup . . . Steel producers are encouraged by grass roots reports from their salesmen which promise a pickup in orders.

So far the promises outweigh the orders, as the summer lull hangs on. But salesmen who have been beating the bushes for business all summer are receiving more encouragement than they have for months.

Stimulants . . . While steel people are noted for their caution, here are some positive reasons they believe their business will improve:

(1) Number of customers who expect to order more steel soon is increasing. This includes automotive industry, steel's biggest customer, which takes about a fifth of all steel produced. However, the pickup in automotive orders probably won't come as soon as had been expected. Word from Detroit is that model changeovers may take longer than anticipated.

(2) Majority of steel users have virtually completed inventory reduction. This means they will have to increase their steel buying merely to support production at the present rate. Any improvement in their business will raise steel buying at least that much more. Some manufacturers who have cut steel inventories to the bone may actually find it necessary to rebuild in-

ventories a bit to support expanded production schedules.

(3) Steel market has been getting unexpected support in the form of miscellaneous orders from a variety of small manufacturing plants and parts makers, in addition to construction and oil industries. If this support can be held, foreseeable gains from other big users should give the market a lift.

(4) Overall economy has absorbed the shock of readjustment plus summer slump, and climate seems favorable for general business improvement. Government defense and "nudge" programs will furnish an assist.

Distribution . . . Galvanized sheets are still in strong demand, with bookings into November. Structurals and oil country goods come next. Cold-rolled sheets are easing (1 month delivery from mills); hot-rolled sheets are weak, can be had on 2 to 3 week delivery. Bars and railroad products are very weak.

Chicago continues to pace the steel consuming areas.

Production . . . Steelmaking operations this week are scheduled at 64.0 pct of rated capacity, unchanged from last week's revised rate.

Steel Output, Operating Rates

Production (Net tons, 000 omitted)	This Week†	Last Week	Month Ago	Year Ago
Ingot Index (1947-49=100)	94.6	95.1	95.5	133.6
Operating Rates				
Chicago	68.5	70.0	70.0	101.5
Pittsburgh	62.0	61.0*	64.0	95.0
Philadelphia	56.0	56.0	56.0	98.0
Valley	59.0	62.0*	63.0	100.0
West	82.0	80.0*	77.5	96.0
Detroit	62.0	56.0	68.0	108.0
Buffalo	56.5	56.5	59.0	106.5
Cleveland	57.0	59.0*	63.0	96.0
Birmingham	64.5	72.0	75.0	95.5
S. Ohio River	72.0	68.0	68.0	86.0
Wheeling	84.0	86.0*	78.0	101.0
St. Louis	54.5	47.5	53.0	103.0
East	49.0	32.0	52.0	107.5
Aggregate	64.0	64.0*	64.5	95.0

* Revised. † Tentative

Prices At A Glance

(cents per lb unless otherwise noted)

	This Week	Week Ago	Month Ago	Year Ago
Composite prices				
Finished Steel, base	4.801	4.801	4.801	4.634
Pig Iron (gross ton)	\$56.59	\$56.59	\$56.59	\$56.76
Scrap, No. 1 hvy (gross ton)	\$27.83	\$27.83	\$26.58	\$44.42
Nonferrous				
Aluminum, ingot	22.20	21.50	21.50	21.50
Copper, electrolytic	30.00	30.00	30.00	29.25
Lead, St. Louis	13.80	13.80	13.80	13.80
Magnesium, ingot	27.75	27.75	27.75	27.00
Nickel, electrolytic	63.08	63.08	63.08	63.08
Tin, Straits, N. Y.	93.00	95.00	96.50	78.50
Zinc, E. St. Louis	11.00	11.00	11.00	11.00

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FLAT ROLLED AND BAR AND TUBE STOCKS AND PROCESSING SERVICES FROM 11 PLANTS



Indicate September Upturn

Mild pickup on hot & cold sheets . . . Detroit,
Chicago report increased bar sales . . . Oil country may slow
in final quarter . . . Two firms up shape, plate prices.

♦ A CLUE to the outlook on sheets comes this week from Detroit. Sources in the automobile center advise that while demand will continue spotty through September, total tonnage will pick up during that month.

Another encouraging note is that the biggest car producers plan for shorter periods of downtime than do the independents. So it looks like October will shape up as one of the best months for sheets. Other steel products that go into the manufacture of automobiles probably will be similarly affected.

Carbon bars are beginning to show some signs of life but the pickup is not significant. Meanwhile, several large mills say they have encountered evidence of price-cutting by a marginal producer of hot-rolled carbon bars. They are not meeting this type of competition, which in one instance amounted to \$6 to \$8 per ton in the bidding on a shell steel contract.

Price increases by Central Iron & Steel Co., and Phoenix Iron & Steel Co., effective Aug. 2, on plates and structural shapes, respectively, reduced the price advantage previously enjoyed by these mills. Phoenix increased structural shapes by \$3 per ton, leaving them \$7 under the regular market price. Central jumped plates by \$2.50, cutting its advantage over other mills to \$5 per ton.

Other price action during the last week includes a reduction by U. S. Steel of \$3 per ton on its Galvannealed sheets, a specialty product, effective Aug. 5. The new price of \$5.85 per cwt was dictated, the company said, by competition.

SHEET AND STRIP . . . Chicago is on a two-to-three week delivery basis on hot rolled sheets; cold rolled deliveries of 4-to-6 weeks are being quoted, with a mild pickup on wider sizes at the warehouse level; strip continues slow. For Detroit see above. The East reports a slight pickup over July; customers are sticklers for quality. In Pittsburgh the market continues dull. U. S. Steel Corp.'s Clairton steel works has been shut down for three weeks while new equipment

for the processing of silicon steel slabs is being installed. This is part of a move to shift silicon steel melting and processing to hot-rolled coils from Vandergrift to Clairton.

BARS . . . Price-cutting by a marginal mill has cost several producers some hot rolled bar business but they are not meeting this type of competition. In Chicago, cold-finished bars show no improvement but hot-rolled demand is slightly stronger; both types are available for quick delivery; seasonal slowdowns in automotive and farm equipment demand is cutting into shipments. Detroit looks for a pickup in forging bars and billets in September, but August will continue slow. In the East, carbon bars are slightly better than in July but still sluggish; highway construction is sustaining reinforcing bar demand. On the West Coast the market is fair-to-good.

TUBULAR . . . The oil country goods market looks good through third quarter, but observers are cautious about fourth-quarter outlook. (THE IRON AGE, Aug. 5, 1954, p. 63). Some consumers say they will be cutting their inventories in the Oct-Dec. period. A Pittsburgh district mill expects its oil country seamless production to continue at capacity to the end of 1954 but it adds that competi-

tion is increasing. Tubing specialties continue slow. Chicago reports that butt-weld demand is waning, along with large line pipe activity. On the latter product, planned construction will perk up the market when contracts are made. In the East, contractors and jobbers are keeping the butt-weld market moving.

STRUCTURALS AND PLATE . . . Phoenix Iron & Steel Co. has raised price of structural shapes by \$3 per ton to \$3.95 per cwt; Central Iron & Steel has upped carbon plates by \$2.50 per ton to \$3.975 per cwt. Eastern shipbuilder received contract for four destroyer escorts, marking the first significant shipbuilding activity in Philadelphia for some months. Producers look for piggy-back railroad car construction to generate some business late this fall. Meanwhile, wide-flange beam demand continues strong and standard structurals are firm but conditions are competitive. Small fabricating shops, desperate for business, are underbidding the large companies on scattered fabricating contracts in the East. The plate market is slow everywhere.

WIRE . . . Demand for manufacturers wire is up slightly; construction products still booming. Merchant trade products are fair. In Chicago, the wire market is mixed. Mills that slowed production for vacations are working on backlogs but new ordering has slowed; shipments in mid-West are still strong. The East reports that demand for nails is good, but farm products are off in relation to demand during the spring; foreign competition is a factor, particularly on nails.

PIG IRON . . . West Coast report: Foreign material being offered at \$53 to \$57 per ton FOB cars-dock, but summer foundry lull has slowed demand. Imports are from Australia, South Africa, Sweden, and Germany; quality is good, with foundry analyses comparable to domestic grades.

Purchasing Agent's Checklist

FREIGHT: Rail rate cuts no traffic boost	p. 67
STEEL: Railroad buying still weak	p. 69
ORE: First shipment from Labrador	p. 77
ALUMINUM: Prices follow wage hike	p. 73
ALUMINUM: New code to designate alloys	p. 75

Zinc Stocks At '54 Low

Stockpiling offsets seasonal dip . . . Smelter stocks at 197,885 tons . . . GSA renews lead, zinc buying . . . Wrought magnesium shows gain in June—By R. L. Hafscek.

♦ NEW ACTIVITY is noted in markets for most of the nonferrous metals this week. It stems from different factors in each case.

Latest zinc statistics show the real impact "new look" stockpiling is having in this soft market. Despite the seasonal dip in consumption, the rise in stockpile buying has helped trim smelter stocks for the third consecutive month. Lead is also getting the benefit of government business.

London has turned stronger, too, firming in copper, lead and zinc. Result here has been a sympathetic boost for all three.

Aluminum is settling back to normal as wage-price echoes, in the form of new price sheets on mill products, reverberate through industry. Labor is still a question mark in copper, but the settlement is likely to follow this year's general pattern.

ALUMINUM . . . Latest round of wage and price increases in aluminum is now in its last phase as producers are issuing new lists for mill products (See p. 73). Interesting note on market conditions is the variation in increases for different products—some weren't raised at all because of competitive factors. And aluminum producers also state that the price increase doesn't completely cover all the cost increases resulting from higher wages and higher material and service costs.

Salesmen, however, are reporting a

general improvement in demand. Aluminum Assn. shipment figures for June bear this out—although the increased tonnages reported in most categories may actually result from strike hedge and price hedge buying. Hedge buying wasn't much of a factor but it probably nudged the totals upward a bit.

Note one thing: Foil shipments set a new record in June, just topping the previous high set in March.

Following are June aluminum mill product shipments compared with May totals. Figures are in net tons:

	June	May
Sheet & Plate, total.....	44,535	42,939
Non-Heat-Treatable ..	34,491	33,923
Heat-Treatable	10,043	9,016
Foil	5,937	5,281
Extruded products, total	12,347	11,642
Soft Alloys	9,566	8,760
Hard Alloys	2,781	2,882
Tube, Drawn, total	2,647	2,558
Soft Alloys	2,225	2,260
Hard Alloys	422	298
Rod & Bar, Rolled	5,931	6,135
ACSR & Cable, Bare	5,073	5,159
Wire, Other than Conductor	1,490	1,201
Forgings	1,718	1,660
Castings, total	10,899	10,861
Sand	800	739
Permanent Mold	5,222	5,047
Die	4,877	5,075

COPPER . . . Labor unrest, despite recent signing between Phelps-Dodge Corp. and the AFL union, seems to have added a bit more urgency to buyers last week in the already tight copper market. It's felt in some circles that the Phelps-Dodge contract will set the pace in the copper industry (5¢ per hour wage hike plus pension and insurance benefits) but that prices won't follow as they did in steel and aluminum. What will happen is that

the industry will try to trim other costs—such as scrap buying prices.

LEAD . . . A stronger London market and the return of GSA to the domestic market have injected some new strength into lead, reversing the previous weakness. Lead's no tower of strength yet, but the tone has definitely improved.

MAGNESIUM . . . While foundries today are reporting a healthy rise in inquiries for magnesium castings, May shipment figures showed another decline. Month's total was 869 tons (April, 1034 tons). This is felt to be seasonal since foundry business reacts about 3 months ahead of its customer's sales charts.

One thing seems evident in the increasing number of inquiries: More shopping for the right price.

June statistics on primary ingot and wrought products are somewhat startling, however. Ingot output of 6190 tons brought the first half total to 37,700 tons—just topping second half 1953. And wrought product shipments in June totaled 656 tons—beating the June 1953 figure by 10 pct. This last is largely the result of the government missile program.

ZINC . . . Usual summer vacation slump hit domestic shipments of slab zinc in July, dropping the total from June's 72,262 tons to 59,197. But a further 7500-ton boost in shipments to the U. S. government brought this category to 13,214 tons and total shipments, including export, to 73,886 tons (June 80,244). Unfilled orders went up 5600 tons to 38,719, highest in over a year.

A 900-ton drop in production to 70,647 tons brought things into favorable balance and the mountainous stocks of slab zinc held by smelters dipped to 197,885 tons as compared to 201,124 tons a month before. This tonnage held at the beginning of August is the lowest this year.

Stockpile purchasing is continuing with General Services Administration last week buying an estimated 15,000 tons for delivery by Oct. 15. This is about the tonnage purchased a month ago.

This factor, good demand for galvanizing and the seasonal upturn expected in brass should combine to really cut smelter stocks during the current month.

Tin . . . Prices have been slipping a fraction every day for the past 2 weeks. Skid had dropped tin to 93¢ per lb at the beginning of the week—lowest since mid-May.

Daily Nonferrous Metal Prices

(Cents per lb except as noted)

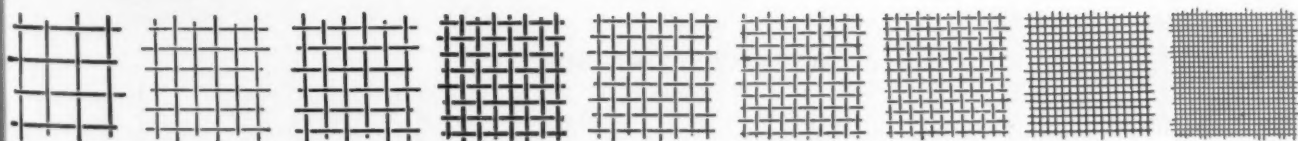
	Aug. 4	Aug. 5	Aug. 6	Aug. 7	Aug. 9	Aug. 10
Copper, electro, Conn.	30.00	30.00	30.00	30.00	30.00	30.00
Copper, Lake, delivered	30.00	30.00	30.00	30.00	30.00	30.00
Tin, Straits, New York	95.50	94.75	94.25	93.00	93.00*
Zinc, East St. Louis	11.00	11.00	11.00	11.00	11.00	11.00
Lead, St. Louis	13.80	13.80	13.80	13.80	13.80	13.80

Note: Quotations are going prices

*Tentative

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magnified opening...*

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August 12, 1954

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Nonferrous Prices

(Effective Aug. 10, 1954)

MILL PRODUCTS

(Cents per lb, unless otherwise noted)

Aluminum

Does not reflect latest increase.

(Base 30,000 lb, f.o.b. ship. pt. frt. allowed)

Flat Sheet: 0.136 in. and thicker, 2S, 3S, 33.9¢; 4S, 36.0¢; 52S, 38.2¢; 24S-O, 24S-OAL, 37.0¢; 76S-O, 76S-OAL, 44.7¢; 0.081-in., 2S, 3S, 35.1¢; 4S, 37.7¢; 52S, 39.9¢; 24S-O, 24S-OAL, 38.4¢; 76S-O, 76S-OAL, 46.9¢; 0.082-in., 2S, 3S, 37.0¢; 4S, 41.8¢; 24S-O, 24S-OAL, 46.9¢; 76S-O, 76S-OAL, 58.4¢.

Plate, 1/4-in., and Heavier: 2S-F, 3S-F, 32.4¢; 4S-F, 34.5¢; 52S-F, 36.2¢; 61S-O, 35.6¢; 24S-O, 24S-OAL, 36.9¢; 76S-O, 76S-OAL, 44.3¢.

Extruded Solid Shapes: Shape factors 1 to 5, 36.5¢ to 82.8¢; 12 to 14, 37.2¢ to 99.0¢; 24 to 26, 39.9¢ to 112.9¢; 36 to 38, 47.2¢ to 118.9¢.

Rod, Rolled: 1.064 to 4.5-in., 2S-F, 3S-F, 43.8¢ to 37.2¢; cold-finished, 0.375 to 3.449-in., 2S-F, 3S-F, 47.6¢ to 39.3¢.

Screw Machine Stock: Rounds, 11S-T3, 1/2 to 11/31-in., 69.6¢ to 47.0¢; 1/2 to 1 1/2-in., 46.6¢ to 43.8¢; 1 1/2 to 3-in., 42.7¢ to 39.9¢. Base 5000 lb.

Drawn Wire: Coiled 0.051 to 0.374-in., 2S, 44.1¢ to 32.4¢; 52S, 53.4¢ to 39.1¢; 17S-T4, 60.1¢ to 41.8¢; 61S-T4, 53.9¢ to 41.3¢.

Extruded Tubing: Rounds, 63S-T5, OD 1 1/4 to 2-in., 31.6¢ to 60.7¢; 2 to 4 in., 37.7¢ to 51.1¢; 4 to 6 in., 38.2¢ to 46.6¢; 6 to 9 in., 38.7¢ to 48.8¢.

Roofing Sheet: Flat, per sheet, 0.032-in., 42% x 60 in., \$2.838; x 96 in., \$4.543; x 120 in., \$5.680; x 144 in., \$6.816. Coiled sheet, per lb, 0.019 in., x 28 in., 30.8¢.

Magnesium

(F.o.b. mill, freight allowed)

Sheet & Plate: F31-O 1/4 in., 56¢; 3/16 in., 57¢; 1/8 in., 60¢ 0.064 in., 73¢; 0.032 in., 94¢. Specification grade higher. Base 30,000 lb.

Extruded Round Rod: M, diam 1/4 to 0.311 in., 77¢; 1/2 to 1 in., 60.5¢; 1 1/4 to 1.749 in., 66¢; 2 1/4 to 5 in., 51.5¢. Other alloys higher. Base up to 1/2 in. diam, 10,000 lb; 1/2 to 1 in., 20,000 lb; 2 in. and larger, 30,000 lb.

Extruded Solid Shapes: Rectangles: M. In weight per ft, for perimeters less than size indicated: 0.10 to 0.11 lb, 3.5 in., 65.3¢; 0.22 to 0.25 lb, 5.9 in., 62.3¢; 0.50 to 0.59 lb, 8.6 in., 59.7¢; 1.8 to 2.59 lb, 19.5 in., 56.8¢; 4 to 6 lb, 28 in., 52¢. Other alloys higher. Base, in weight per ft of shape: Up to 1/4 lb, 10,000 lb; 1/4 to 1.80 lb, 20,000 lb; 1.80 lb and heavier, 30,000 lb.

Extruded Round Tubing: M, 0.049 to 0.057 in. wall thickness: OD, 1/4 to 5/16 in., \$1.43; 5/16 to 1/2 in., \$1.29; 1/2 to 3/4 in., 96¢; 1 to 2 in., 79¢; 0.165 to 0.219 in. wall: OD, 1/2 to 3/4 in., 64¢; 1 to 2 in., 60¢; 3 to 4 in., 59¢. Other alloys higher. Base, OD: Up to 1 1/4 in., 10,000 lb; 1 1/4 to 3 in., 20,000 lb; over 3 in., 30,000 lb.

Titanium

(10,000 lb base, f.o.b. mill)

Commercially pure and alloy grades: Sheets and strip, HR or CR, \$15; Plate, HR, \$12; Wire, rolled and/or drawn, \$11; Bar, HR or forged, \$6; Forgings, \$8.

Nickel, Monel, Inconel

(Base prices, f.o.b. mill)

	"A" Nickel	Monel	Inconel
Sheet, CR	86 1/2	67 1/2	92 1/2
Strip, CR	92 1/2	70 1/2	98 1/2
Rod, bar	82 1/2	65 1/2	88 1/2
Angles, HR	82 1/2	65 1/2	88 1/2
Plate, HR	84 1/2	66 1/2	90 1/2
Seamless tube, 115 1/2	100 1/2	137 1/2	
Shot, blocks	60		

Copper, Brass, Bronze

(Freight included on 500 lb)

	Sheet	Rods	Extruded Shapes
Copper	46.41		48.48
Copper, h-r	48.38	44.73	
Copper, drawn		45.98	
Low brass	44.47	44.41	
Yellow brass	41.72	41.66	
Red brass	45.44	45.38	
Naval brass	45.76	40.07	
Leaded brass			39.11
Com. bronze	46.95	46.89	
Mang. bronze	49.48	43.62	45.18
Phos. bronze	66.58	67.08	
Muntz metal	43.96	39.77	41.02
NI silver, 10 pct	55.36		62.63
Beryllium copper, CR, 1.9% Be, Base			
2000 lb, f.o.b.			
Strip			\$1.68
Rod, bar, wire			1.65

PRIMARY METALS

(Cents per lb, unless otherwise noted)

Aluminum ingot, 99+%, 10,000 lb, freight allowed 22.20
Aluminum pig 20.50
Antimony, American, Laredo, Tex. 28.50
Beryllium copper, per lb conta'd be. \$40.00
Beryllium aluminum 5% Be, Dollars
per lb contained Be \$72.75
Bismuth, ton lots 32.25
Cadmium, del'd 1.70
Cobalt, 97-99% (per lb) \$2.60 to \$2.67
Copper, electro, Conn. Valley 30.00
Copper, Lake, delivered 30.00
Gold, U. S. Treas., per troy oz. \$35.00
Indium, 99.8%, dollars per troy oz. \$2.25
Iridium, dollars per troy oz. \$165 to \$175
Lead, St. Louis 13.80
Lead, New York 14.00
Magnesium, 99.8+%, f.o.b. Freeport, Tex., 10,000 lb, pig 37.00
ingot 27.75
Magnesium, sticks, 100 to 500 lb, 46.00 to 48.00
Mercury, dollars per 76-lb flask, f.o.b. New York \$290 to \$293
Nickel electro, f.o.b. N. Y. warehouse 63.08
Nickel oxide sinter, at Copper Creek, Ont., contained nickel 56.25
Palladium, dollars per troy oz. \$21.00
Platinum, dollars per troy oz. \$84 to \$87
Silver, New York, cents per troy oz. 85.25
Tin, New York 93.00
Titanium, sponge, grade A-1 44.72
Zinc East St. Louis 11.00
Zinc New York 11.50
Zirconium copper, 50 pct 66.20

REMELTED METALS

Brass Ingot

(Cents per lb delivered, carloads)

85-5-5-5 ingot
No. 115 27.00
No. 120 26.25
No. 123 25.75
80-10-10 ingot
No. 305 31.50
No. 315 29.25
88-10-2 ingot
No. 210 41.25
No. 215 37.75
No. 245 33.25
Yellow ingot
No. 405 23.25
Manganese bronze
No. 421 26.75

Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys
0.30 copper, max. 23.00-23.25
0.60 copper, max. 22.50-23.00
Piston alloys (No. 122 type) 20.00-21.25
No. 12 alum. (No. 2 grade) 19.25-20.00
108 alloy 20.00-20.50
195 alloy 21.00-22.00
13 alloy (0.60 copper max.) 22.50-23.00
ASX-679 20.00-20.50

Steel deoxidizing aluminum, notch-bar granulated or shot

Grade 1-96-97 1/2% 20.50-22.00
Grade 2-92-95% 19.50-20.75
Grade 3-90-92% 18.75-19.75
Grade 4-85-90% 17.50-18.50

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, freight allowed, 5000 lb lots)

Copper
Cast, oval, 15 in. or longer 42.64
Electrodeposited 41.88
Flat rolled 45.04
Brass, 80-20
Cast, oval, 15 in. or longer 43.515
Zinc, flat cast 20.25
Ball, anodes 18.50
Nickel, 99 pct plus
Cast 84.00
Cadmium 17.70
Silver 999 fine, rolled, 100 oz. lots
per troy oz., f.o.b. Bridgeport, Conn. 94 1/4

Chemicals

(Cents per lb, f.o.b. shipping points)

Copper cyanide, 100 lb drum 63.00
Copper sulfate, 99.5 crystals, bbl. 12.85
Nickel salts, single or double, 4-100 lb bags, frt. allowed 30.00
Nickel chloride, 375 lb drum 38.00
Silver cyanide, 100 oz. lots, per oz. 75 1/2
Sodium cyanide, 98 pct domestic 200 lb drums 19.25
Zinc cyanide, 100 lb drum 54.30

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over)

	Heavy	Turnings
Copper	26	25 1/2
Yellow brass	19 1/2	18
Red brass	23	23 1/2
Comm. bronze	23 1/2	23 1/2
Mang. bronze	18 1/2	17 1/2
Yellow brass rod ends	19 1/2	

Custom Smelters' Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	26 1/2-27
No. 2 copper wire	25 1/2-25 3/4
Light copper	23 1/2-24
Refinery brass	22 1/2-23

*Dry copper content.

Ingot Makers' Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	26 1/2-27
No. 2 copper wire	25 1/2-25 3/4
Light copper	23 1/2-24
No. 1 composition	21 1/2
No. 1 comp. turnings	20 1/4
Roller brass	17
Brass pipe	18 1/2
Radiators	17 1/2-18

Aluminum

Mixed old cast	13	13 1/2
Mixed new clips	13 1/2	14
Mixed turnings, dry	13 1/2	13 1/2
Pots and pans	13	13 1/2

Dealers' Scrap

(Dealers' buying price, f.o.b. New York in cents per pound)

Copper and Brass

No. 1 heavy copper and wire	24 1/2-25
No. 2 heavy copper and wire	23-23 1/2
Light copper	21-21 1/2
New type shell cuttings	20 1/2
Auto radiators (unsweated)	19
No. 1 composition	19-19 1/2
No. 1 composition turnings	18 1/2-19
Unlined red car boxes	16
Cocks and faucets	16-16 1/2
Mixed heavy yellow brass	13
Old rolled brass	15 1/2
Brass pipe	16 1/2-17
New soft brass clippings	16
Brass rod ends	15
No. 1 brass rod turnings	15

Aluminum

Alum. pistons and struts	7	8
Aluminum crankcases		10
2S aluminum clippings		13
Old sheet and utensils		10
Borings and turnings	6	7
Misc. cast aluminum		10
Dural clips (24S)		11

Zinc

New zinc clippings	6	6 1/2
Old zinc	4 1/2	5
Zinc routings	3	3 1/2
Old die cast scrap	3	3 1/2

Nickel and Monel

Pure nickel clippings	60	65
Clean nickel turnings		40
Nickel anodes	60	65
Nickel rod ends	60	65
New Monel clippings	23	25
Clean Monel turnings	16	18
Old sheet Monel	21	23
Nickel silver clippings, mixed		16
Nickel silver turnings, mixed		13

Lead

Soft scrap lead	11	11 1/2
Battery plates (dry)	5 1/2	6
Batteries, acid free		4 1/2

Magnesium

Segregated solids	18 1/2	19
Castings	17 1/2	18

Miscellaneous

Block tin	75	80
No. 1 pewter	55	60
No. 1 auto babbitt		48
Mixed common babbitt	12	12 1/2
Solder joints		16 1/2
Siphon tops		45
Small foundry type		16 1/4
Monotype		14
Lino. and stereotype		13
Electrotype		11 1/2
Hand picked type shells		8 1/2
Lino. and stereo. dross		5 1/2
Electro dross		4

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Market Dozes in Summer Lull

Mid-August finds scrap quiet but prices fairly firm . . .

Export business gives strength to all sections . . . Independent mill buying perking up . . . Composite unchanged

◆ THE scrap market continued quiet but firm throughout most of the country this week. Exports on both coasts kept eastern and western dealers occupied, strengthened prices. Strengthening effect spread into the central portion of the country, definitely improved overall market tone.

If dealers and brokers were too far inland to export, they did not worry about out-of-area material glutting their market. Mill buying generally was slow, but still in evidence. Independent mills in particular were coming in more strongly, boosting hopes for brisk fall business.

Cast movement was spotty, with some areas reporting it very strong, others puny. Material from Minneapolis and St. Louis, for example, was finding a good home in Birmingham. It's probably too early to tell for sure, but here and there were signs that turnings may be rousing out of their long lethargy.

Reflecting the midsummer quiet of the market, THE IRON AGE Heavy Melting Scrap Composite Price remained at last week's peg of \$27.83 per gross ton.

Pittsburgh . . . Market is dull. Activity is virtually at a standstill after limited purchase last week. Major consumers still have good inventories, and August steel production is not expected to show much improvement. Firm market in neighboring district and export bullishness in the East are helping hold the market steady. There is strong sentiment of some who have been holding material to hold it a while longer. No. 1 bundles should have been \$29 and \$30 last week.

Chicago . . . Scrap continued to look strong without any heavy mill activity. Spot sales to several mills indicated advances in steelmaking

grades. Turnings advanced \$2 on mill sales. Electric furnace and foundry material continued to drag. Railroad list prices are currently very strong, but little of this has been reflected in advanced consumer prices. A mill sale of No. 2 heavy melting at \$27 failed to weaken the market in that grade, with material continuing to move at \$28. No. 2 dealer bundle prices, still dragging on a past \$23 mill sale, are in very poor shape despite other advances, and are freely available at \$21 from dealers in considerable tonnages.

Philadelphia . . . Export business continues to be the main factor in this area as an estimated total of more than 15,000 tons of steelmaking grades have left this port in the past 2 weeks. Another ship was being loaded early this week. This material is now being divided equally in Nos. 1 and 2 steel and Nos. 1 and 2 bundles.

New York . . . The market picture here is relatively unchanged from last week. Export trade continues brisk, holding steelmaking prices at previous levels. Domestic mill buying is sluggish, but a few small sales of bundles were reported. Cast remains sound, turnings, very slow.

Detroit . . . Moderate strength appeared in No. 1 grades in Detroit. The optimistic feeling was not translated into price increases, but supported price increases of a week ago. Turnings all went up \$1, not because of any new strength, but more as an equalizing factor with other districts.

Cleveland . . . This market tapered off somewhat last week with scrap harder to push. Prices unchanged except a Youngstown area producer bought 5000 tons of low phos plate scrap direct from a customer at \$32.50. Dealers report market had good underlying strength last week but little immediate action. Collections also continuing a seasonal drop due to vacations.

Birmingham . . . Southern and southeastern scrap dealers are turning more and more to the export market. Brokers say this fall will see exports from Charleston, Savannah, Jacksonville, Tampa, Pensacola, Mobile and New Orleans. Shipments are now being booked for September and October sailings.

St. Louis . . . Several outside consumers came into the market for a total of 1000 tons of machine shop turnings and shoveling turnings at from 50¢ to \$1 higher. A favorable movement in the East is not reflected in the market here, as steel mills continue the policy of buying nearby at present levels only in sufficient quantities to cover current melt, which is at 54.4 pct, an increase of 7 points over preceding weeks.

Cincinnati . . . Only two major mills bought last week and on limited tonnage at prevailing prices. Both sales were for No. 1 grades. Dealers here hopeful market will show additional strength next month.

Buffalo . . . While steelmaking grades of scrap maintained steady strength, new sales were reported in cast at declines of \$2. Dealers in some instances were having trouble finding steel grades to cover recent orders. A shrinkage in receipts from other areas which usually ship here reflects current export business in the East. Dealers were covering from yard stocks.

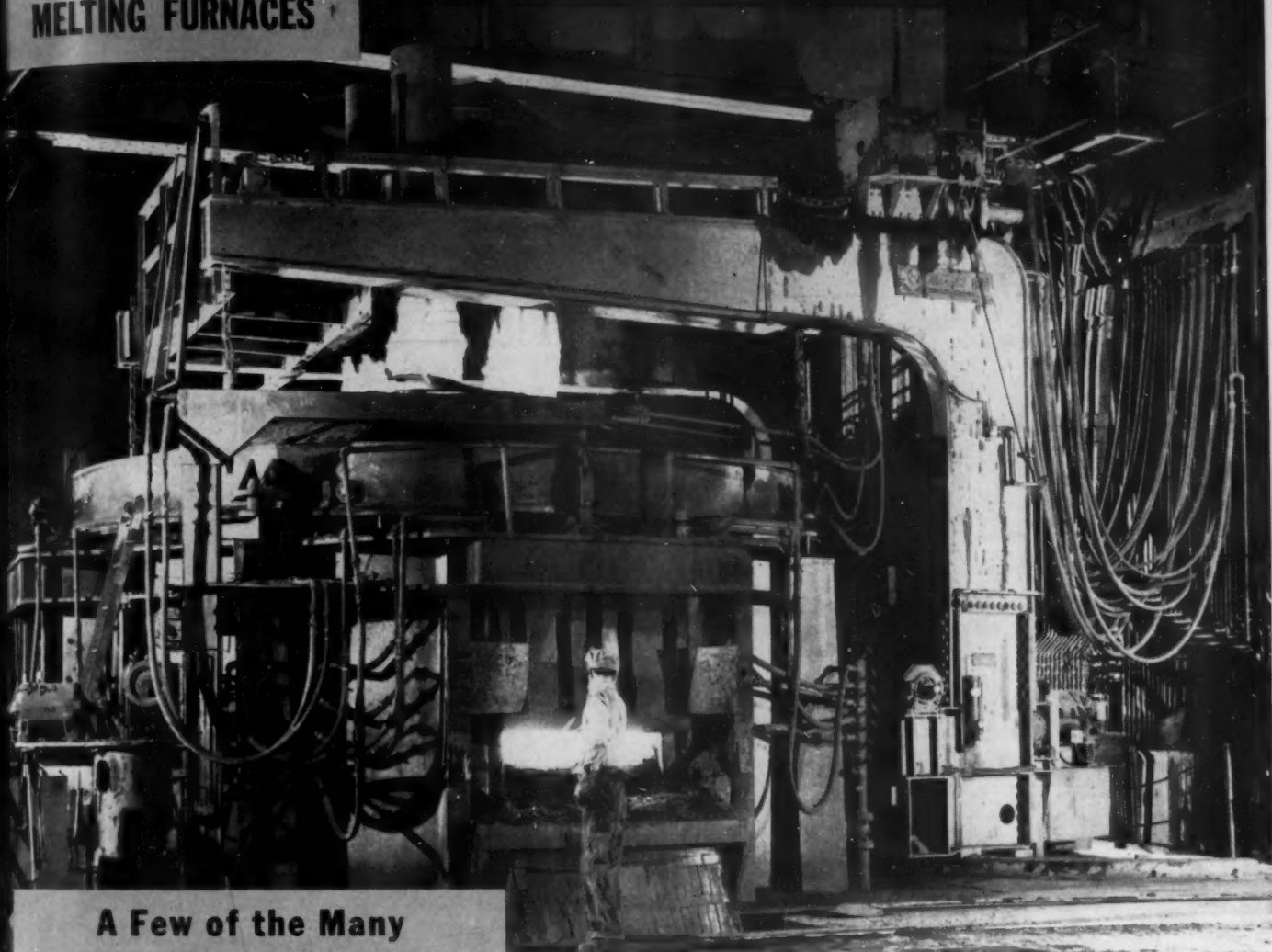
Boston . . . Export trading continues to occupy the New England scrap trade this week. One ship was reported ready early in the week and another due shortly. Most of this business is in good quality No. 1 and No. 2 heavy melting. Due to a typographical error, last week's quotation for unstripped motor blocks was incorrect. It should have been \$15.50 to \$16.00 per gross ton.

West Coast . . . Summer quiet still reigns. Japanese buying active in San Francisco; would be more so if they had more dollars. One mill is back in the market but only for small quantities. August requirements placed by one mill in Los Angeles are 30-40 pct below July and only No. 2 bundles and a little No. 2 heavy melting is asked. Western cast scrap continues firm, going through Los Angeles dealers' plants as fast as it comes in. Fall-off in demand is looked for as soon as foundry inventories reach good build-up point.

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UNITED STATES STEEL

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Scrap Prices

(Effective Aug. 10, 1954)

Pittsburgh

No. 1 hvy. melting	\$29.00 to \$30.00
No. 2 hvy. melting	26.00 to 27.00
*No. 1 bundles	29.00 to 30.00
No. 2 bundles	23.00 to 24.00
Machine shop turn.	15.50 to 16.50
Mixed bor. and ms. turns.	15.50 to 16.50
Shoveling turnings	19.50 to 20.50
Cast iron borings	18.00 to 19.00
Low phos. punch'gs, plate	31.00 to 32.00
Heavy turnings	26.00 to 27.00
No. 1 RR. hvy. melting	31.00 to 32.00
Scrap rails, random lgth.	36.00 to 37.00
Rails 2 ft and under	42.00 to 43.00
RR. steel wheels	34.00 to 35.00
RR. spring steel	34.00 to 35.00
RR. couplers and knuckles	24.00 to 35.00
No. 1 machinery cast.	42.00 to 43.00
Cupola cast.	34.00 to 35.00
Heavy breakable cast.	30.00 to 31.00

*Effective Aug. 3, 1954

Chicago

No. 1 hvy. melting	\$29.00 to \$30.00
No. 2 hvy. melting	27.00 to 28.00
No. 1 factory bundles	32.00 to 33.00
No. 1 dealers' bundles	29.00 to 30.00
No. 2 dealers' bundles	21.00 to 22.00
Machine shop turn.	14.00 to 15.00
Mixed bor. and turn.	16.00 to 17.00
Shoveling turnings	16.00 to 17.00
Cast iron borings	16.00 to 17.00
Low phos. forge crops	35.00 to 36.00
Low phos. punch'gs, plate	33.00 to 34.00
Low phos. 3 ft and under	32.00 to 33.00
No. 1 RR. hvy. melting	32.00 to 33.00
Scrap rails, random lgth.	36.00 to 37.00
Rerolling rails	43.00 to 44.00
Rails 2 ft and under	43.00 to 44.00
Locomotive tires, cut	33.00 to 34.00
Cut bolsters & side frames	35.00 to 36.00
Angles and splice bars	37.00 to 38.00
RR. steel car axles	40.00 to 41.00
RR. couplers and knuckles	35.00 to 36.00
No. 1 machinery cast.	39.00 to 40.00
Cupola cast.	36.00 to 37.00
Heavy breakable cast.	29.00 to 30.00
Cast iron brake shoes	31.00 to 32.00
Cast iron car wheels	33.00 to 34.00
Malleable	40.00 to 41.00
Stove plate	29.00 to 30.00

Philadelphia Area

No. 1 hvy. melting	\$23.50 to \$25.50
No. 2 hvy. melting	21.50 to 23.50
No. 1 bundles	24.50 to 25.50
No. 2 bundles	18.00 to 19.00
Machine shop turn.	13.00 to 14.00
Mixed bor. short turn.	15.00 to 16.00
Cast iron borings	15.00 to 16.00
Shoveling turnings	16.00 to 17.00
Clean cast chem. borings	20.00 to 21.00
Low phos. 5 ft and under	26.00 to 27.00
Low phos. 2 ft and under	27.00 to 28.00
Low phos. punch'gs	27.00 to 28.00
Elec. furnace bundles	25.00 to 26.00
Heavy turnings	23.00 to 24.00
RR. steel wheels	31.00 to 32.00
RR. spring steel	31.00 to 32.00
Rails 18 in. and under	40.00 to 41.00
Cupola cast.	34.00 to 35.00
Heavy breakable cast.	35.00 to 36.00
Cast iron car wheels	38.00 to 39.00
Malleable	36.00 to 37.00
Unstripped motor blocks	27.00 to 28.00
No. 1 machinery cast.	39.00 to 40.00
Charging box cast.	36.00 to 37.00

Cleveland

No. 1 hvy. melting	\$28.00 to \$29.00
No. 2 hvy. melting	25.00 to 26.00
No. 1 bundles	28.00 to 29.00
No. 2 bundles	23.00 to 24.00
No. 1 busheling	28.00 to 29.00
Machine shop turn.	12.00 to 13.00
Mixed bor. and turn.	16.00 to 17.00
Shoveling turnings	16.00 to 17.00
Cast iron borings	16.00 to 17.00
Cut struct'l & plate, 2 ft & under	31.50 to 32.50
Drop forge flashings	25.00 to 27.00
Low phos. 2 ft & under	30.00 to 31.00
No. 1 RR. heavy melting	29.00 to 30.00
Rails 3 ft and under	42.00 to 43.00
Rails 18 in. and under	43.00 to 44.00
Railroad grate bars	27.00 to 28.00
Steel axle turnings	19.00 to 20.00
Railroad cast.	41.00 to 42.00
No. 1 machinery cast.	41.00 to 42.00
Stove plate	34.00 to 35.00
Malleable	40.00 to 41.00

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Youngstown

No. 1 hvy. melting	\$30.00 to \$32.00
No. 2 hvy. melting	25.00 to 27.00
No. 1 bundles	30.00 to 32.00
No. 2 bundles	23.00 to 25.00
Machine shop turn.	14.00 to 15.00
Shoveling turnings	19.00 to 20.00
Cast iron borings	19.00 to 20.00
Low phos. plate	32.00 to 34.00

Buffalo

No. 1 hvy. melting	\$26.00 to \$27.00
No. 2 hvy. melting	22.00 to 23.00
No. 1 busheling	26.00 to 27.00
No. 1 bundles	26.00 to 27.00
No. 2 bundles	20.00 to 21.00
Machine shop turn.	14.50 to 15.50
Mixed bor. and turn.	17.50 to 18.50
Shoveling turnings	18.00 to 18.50
Cast iron borings	17.50 to 18.50
Low phos. plate	29.00 to 30.00
Scrap rails, random lgth.	33.00 to 34.00
Rails 2 ft and under	40.00 to 41.00
RR. steel wheels	34.00 to 35.00
RR. spring steel	34.00 to 35.00
RR. couplers and knuckles	34.00 to 35.00
No. 1 machinery cast.	38.00 to 39.00
No. 1 cupola cast.	34.00 to 35.00

Detroit

Brokers buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$22.00 to \$23.00
No. 2 hvy. melting	18.00 to 19.00
No. 1 bundles, openhearth	23.00 to 24.00
No. 2 bundles	16.00 to 17.00
New busheling	21.00 to 22.00
Drop forge flashings	21.00 to 22.00
Machine shop turn.	7.00 to 8.00
Mixed bor. and turn.	9.00 to 10.00
Shoveling turnings	9.00 to 10.00
Cast iron borings	9.00 to 10.00
Low phos. punch'gs, plate	22.00 to 23.00
No. 1 cupola cast.	32.00
Heavy breakable cast.	23.00
Stove plate	28.00
Automotive cast.	36.00

St. Louis

No. 1 hvy. melting	\$25.00 to \$26.00
No. 2 hvy. melting	23.50 to 24.50
No. 1 bundles	25.00 to 26.00
No. 2 bundles	19.50 to 20.50
Machine shop turn.	12.50 to 13.00
Cast iron borings	13.00 to 14.00
Shoveling turnings	14.00 to 15.00
No. 1 RR. hvy. melting	29.00 to 30.00
Rails, random lengths	34.00 to 35.00
Rails, 18 in. and under	41.00 to 42.00
Locomotive tires, uncut	30.00 to 31.00
Angles and splice bars	30.00 to 31.00
Std. steel car axles	35.00 to 36.00
RR. spring steel	30.00 to 31.00
Cupola cast.	40.00 to 41.00
Hvy. breakable cast.	29.00 to 30.00
Cast iron brake shoes	25.00 to 26.00
Stove plate	34.00 to 35.00
Cast iron car wheels	30.00 to 31.00
Malleable	35.00 to 36.00
Unstripped motor blocks	29.00 to 30.00

New York

Brokers buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$20.50 to \$21.50
No. 2 hvy. melting	17.50 to 18.50
No. 2 bundles	15.00 to 16.00
Machine shop turn.	5.00 to 6.00
Mixed bor. and turn.	7.00 to 8.00
Shoveling turnings	8.00 to 9.00
Clean cast chem. borings	14.00 to 15.00
No. 1 machinery cast.	35.00 to 36.00
Mixed yard cast.	29.00 to 30.00
Charging box cast.	29.00 to 30.00
Heavy breakable cast.	27.00 to 28.00
Unstripped motor blocks	22.00 to 23.00

Birmingham

No. 1 hvy. melting	\$20.50
No. 2 hvy. melting	19.50
No. 1 bundles	20.00
No. 2 bundles	\$15.00 to 16.00
No. 1 busheling	20.50
Machine shop turn.	15.00 to 16.00
Shoveling turnings	16.00 to 17.00
Cast iron borings	15.00 to 16.00
Electric furnace bundles	26.00 to 27.00
Bar crops and plate	29.00 to 30.00
Structural and plate, 2 ft	29.00 to 30.00
No. 1 RR. hvy. melting	26.00 to 27.00
Scrap rails, random lgth.	34.00 to 35.00
Rails, 18 in. and under	37.50 to 38.50
Angles & splice bars	35.00 to 36.00
Rerolling rails	39.50 to 40.00
No. 1 cupola cast.	43.50 to 44.50
Stove plate	40.50 to 41.50
Charging box cast.	19.00 to 20.00
Cast iron car wheels	33.00 to 34.00
Unstripped motor blocks	34.50 to 35.50
Mashed tin cans	15.00 to 16.00

Boston

Brokers buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$18.00 to \$19.00
No. 2 hvy. melting	14.25 to 15.00
No. 1 bundles	18.00 to 19.00
No. 2 bundles	12.50 to 13.00
No. 1 busheling	18.00 to 19.00
Elec. furnace, 3 ft & under	18.00 to 19.00
Machine shop turn.	4.00 to 5.00
Mixed bor. and short turn.	8.00 to 9.00
Shoveling turnings	10.00 to 11.00
Clean cast chem. borings	11.00 to 12.00
No. 1 machinery cast.	29.00 to 30.00
Mixed cupola cast.	26.00 to 27.00
Heavy breakable cast.	25.00 to 25.50
Stove plate	25.00 to 26.00
*Unstripped motor blocks	15.50 to 16.00

*Effective Aug. 3, 1954.

Cincinnati

Brokers buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$25.50 to \$26.50
No. 2 hvy. melting	22.50 to 23.50
No. 1 bundles	26.00 to 27.00
No. 2 bundles	21.00 to 22.00
Machine shop turn.	11.00 to 12.00
Mixed bor. and turn.	13.50 to 14.50
Shoveling turnings	14.00 to 15.00
Cast iron borings	14.00 to 15.00
Low phos., 18 in. & under	32.00 to 33.00
Rails, random lengths	35.00 to 36.00
Rails, 18 in. and under	43.00 to 44.00
No. 1 cupola cast.	35.00 to 36.00
Hvy. breakable cast.	34.00 to 35.00
Drop broken cast.	43.00 to 44.00

San Francisco

No. 1 hvy. melting	\$20.00
No. 2 hvy. melting	16.00
No. 1 bundles	19.00
No. 2 bundles	16.00
No. 3 bundles	12.00
Machine shop turn.	5.00
Cast iron borings	8.00
No. 1 RR. hvy. melting	20.00
No. 1 cupola cast.	\$42.00 to 45.00

Los Angeles

No. 1 hvy. melting	\$20.00
No. 2 hvy. melting	16.00
No. 1 bundles	19.00
No. 2 bundles	\$15.50 to 16.00
No. 3 bundles	12.00
Machine shop turn.	5.00
Shoveling turnings	7.00 to 9.00
Cast iron borings	7.00 to 9.00
Elec. fur. 1 ft and under	25.00
No. 1 RR. hvy. melting	20.00
No. 1 cupola cast.	43.00 to 45.00

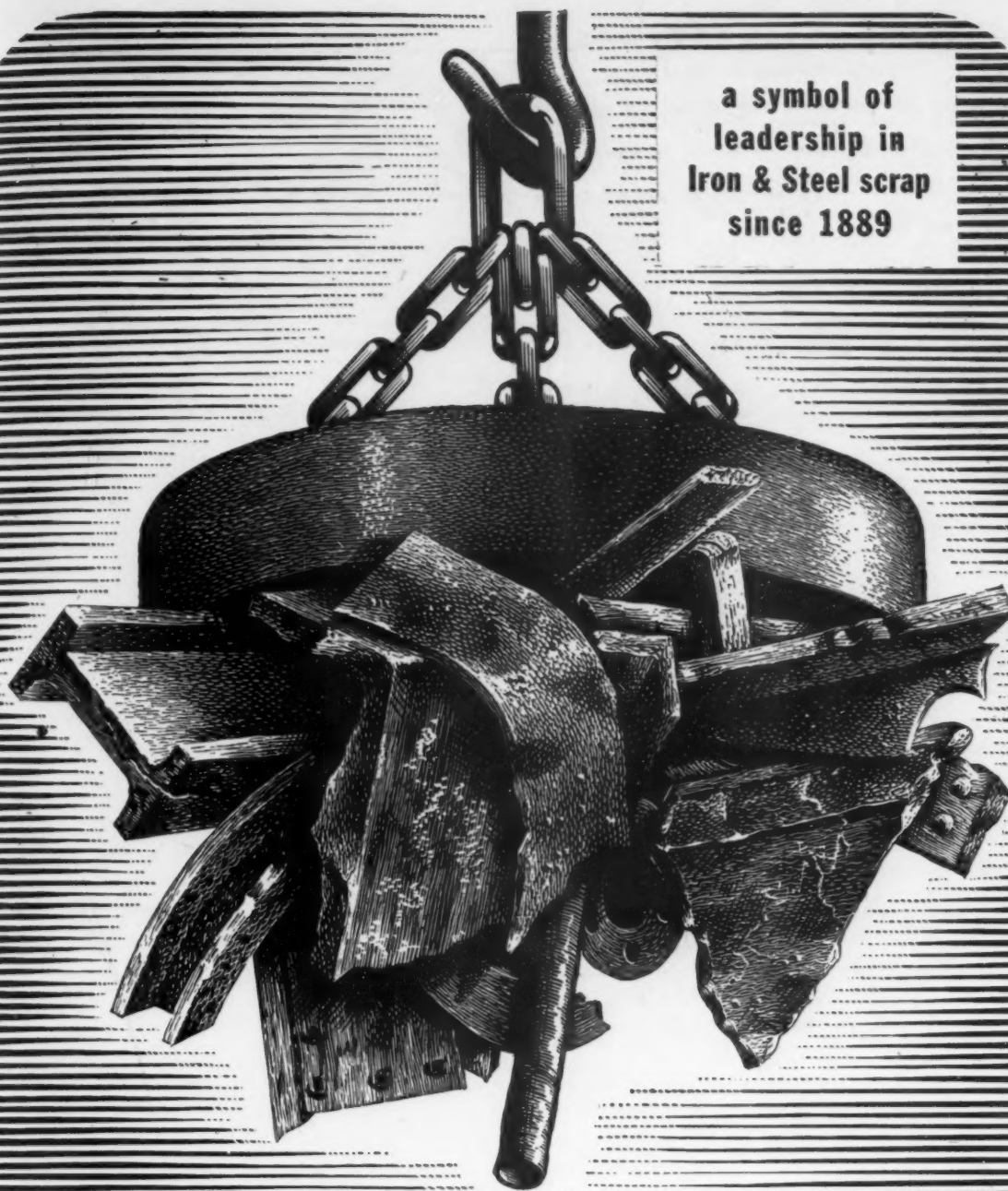
Seattle

No. 1 hvy. melting	\$25.00
No. 2 hvy. melting	21.00
No. 1 bundles	21.50
No. 2 bundles	17.00
No. 3 bundles	13.00
No. 1 cupola cast.	37.00
Mixed yard cast.	35.00

Hamilton, Ont.

No. 1 hvy. melting	\$22.00
No. 2 hvy. melting	19.00
No. 1 bundles	22.00
No. 2 bundles	19.00
Mixed steel scrap	16.00
Bushelings	17.00
Bush., new fact prep'd	20.00
Bush., new fact unprep'd	16.00
Short steel turnings	12.00
Mixed bor. and turn.	12.00
Rails, remelting	31.00
Cast scrap	\$42.00 to 45.00

a symbol of
leadership in
Iron & Steel scrap
since 1889



Luria Brothers and Company, Inc.

MAIN OFFICE
LINCOLN-LIBERTY BLDG.
Philadelphia 7, Penna.

PLANTS

LEBANON, PENNA. DETROIT (ECORSE),
READING, PENNA. MICHIGAN
MODENA, PENNA. PITTSBURGH, PENNA.
ERIE, PENNA.

OFFICES

BIRMINGHAM, ALA.	DETROIT, MICHIGAN	PITTSBURGH, PENNA.
BOSTON, MASS.	HOUSTON, TEXAS	PUEBLO, COLORADO
BUFFALO, N. Y.	LEBANON, PENNA.	READING, PENNA.
CHICAGO, ILLINOIS	LOS ANGELES, CAL.	ST. LOUIS, MO.
CLEVELAND, OHIO	NEW YORK, N. Y.	SAN FRANCISCO, CAL.
	SEATTLE, WASH.	

EXPORTS-IMPORTS — LIVINGSTON & SOUTHARD, INC. 99 Park Avenue, New York, N. Y. Cable Address: FORENTRACO

Comparison of Prices

(Effective Aug. 10, 1954)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland Youngstown.

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

	Aug. 10 1954	Aug. 3 1954	July 13 1954	Aug. 11 1953
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	4.05¢	4.05¢	4.05¢	3.925¢
Cold-rolled sheets	4.95	4.95	4.95	4.775
Galvanized sheets (10 ga.)	5.45	5.45	5.45	5.275
Hot-rolled strip	4.05	4.05	4.05	3.925
Cold-rolled strip	5.82	5.82	5.82	5.675
Plate	4.237	4.237	4.237	4.10
Plates wrought iron	9.30	9.30	9.30	9.00
Stain's C-R strip (No. 302)	41.50	41.50	41.50	41.50
Tin and Terneplate: (per base box)				
Tinplate (1.50 lb.) cokes	\$8.95	\$8.95	\$8.95	\$8.95
Tinplate, electro (0.50 lb.)	7.65	7.65	7.65	7.65
Special coated mfg. ternes	7.75	7.75	7.75	7.75
Bars and Shapes: (per pound)				
Merchant bars	4.312¢	4.312¢	4.312¢	4.15¢
Cold-finished bars	5.40	5.40	5.40	5.20
Alloy bars	5.075	5.075	5.075	4.875
Structural shapes	4.25	4.25	4.25	4.10
Stainless bars (No. 302)	35.50	35.50	35.50	35.50
Wrought iron bars	10.40	10.40	10.40	10.05
Wire: (per pound)				
Bright wire	5.75¢	5.75¢	5.75¢	5.525¢
Rails: (per 100 lb.)				
Heavy rails	\$4.45	\$4.45	\$4.45	\$4.325
Light rails	5.35	5.35	5.35	5.20
Semifinished Steel: (per net ton)				
Rerolling billets	\$64.00	\$64.00	\$64.00	\$62.00
Slabs, rerolling	64.00	64.00	64.00	62.00
Forging billets	78.00	78.00	78.00	75.50
Alloy blooms, billets, slabs	86.00	86.00	86.00	82.00
Wire Rod and Skelp: (per pound)				
Wire rods	4.675¢	4.675¢	4.675¢	4.525¢
Skelp	3.90	3.90	3.90	3.75
Finished Steel Composite: (per pound)				
Base price	4.801¢	4.801¢	4.801¢	4.634¢

Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Steel Scrap Composite

Average of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

	Aug. 10 1954	Aug. 3 1954	July 13 1954	Aug. 11 1953
Pig Iron: (per gross ton)				
Foundry, del'd Phila.	\$61.19	\$61.19	\$61.19	\$62.19
Foundry, Valley	56.50	56.50	56.50	56.50
Foundry, Southern, Cin'ti	60.43	60.43	60.43	60.43
Foundry, Birmingham	52.88	52.88	52.88	52.88
Foundry, Chicago	56.50	56.50	56.50	56.50
Basic del'd Philadelphia	60.27	60.27	60.27	61.27
Basic, Valley furnace	56.00	56.00	56.00	56.00
Malleable, Chicago	56.50	56.50	56.50	56.50
Malleable, Valley	56.50	56.50	56.50	56.50
Ferromanganese, cents per lb.	10.00¢	10.00¢	10.00¢	10.00¢
‡ 76 pct Mn base.				
Pig Iron Composite: (per gross ton)				
Pig iron	\$56.59	\$56.59	\$56.59	\$56.76
Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	\$29.50	\$29.50	\$28.50	\$45.50
No. 1 steel, Phila. area	24.50	24.50	22.75	44.25
No. 1 steel, Chicago	29.50	29.50	28.50	43.50
No. 1 bundles, Detroit	23.50	23.50	22.50	40.50
Low phos., Youngstown	33.00	33.00*	30.50	48.50
No. 1 mach'y cast, Pittsburgh	42.50	42.50	42.50	49.50
No. 1 mach'y cast, Philadelf'a	39.50	39.50	39.50	46.50
No. 1 mach'y cast, Chicago	39.50	39.50	39.50	46.50
* Revised.				
Steel Scrap Composite: (per gross ton)				
No. 1 heavy melting scrap	\$27.83	\$27.83	\$26.58	\$44.42
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	\$14.38	\$14.38	\$14.38	\$14.75
Foundry coke, prompt	16.75	16.75	16.75	17.25
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electrolytic, Conn.	30.00	30.00	30.00	29.25‡
Copper, Lake, Conn.	30.00	30.00	30.00	30.125
Tin, Straits, New York	93.00‡	95.00*	96.50	78.50
Zinc, East St. Louis	11.00	11.00	11.00	11.00
Lead, St. Louis	13.80	13.80	13.80	13.80
Aluminum, virgin ingot	22.20	21.50	21.50	21.50
Nickel, electrolytic	63.08	63.08	63.08	63.08
Magnesium, ingot	27.75	27.75	27.75	27.00
Antimony, Laredo, Tex.	28.50	28.50	28.50	34.50
‡ Tentative. § Average. * Revised.				

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

← To identify producers, see Key on P. 181 →

Producing Point	Basic	Fdry.	Mall.	Bess.	Low Phos.
Bethlehem B3	58.00	58.50	59.00	59.50	
Birmingham R3	52.38	52.88			
Birmingham W9	52.38	52.88			
Birmingham U4	52.38	52.88			
Buffalo R3	56.00	56.50	57.00		
Buffalo H1	56.00	56.50	57.00		
Buffalo W6	56.00	56.50	57.00		
Chicago 14	56.00	56.50	56.50	57.00	
Cleveland A5	56.00	56.50	56.50	57.00	61.00
Cleveland R3	56.00	56.50	56.50		
Dainigfeld L3	52.50	52.50	52.50		
Duluth 14	56.00	56.50	56.50	57.00	
Erie 14	56.00	56.50	56.50	57.00	
Everett M6		61.00	61.50		
Fentana K1	62.00	62.50			
Geneva, Utah C7	56.00	56.50			
Granite City G2	57.90	58.40	58.90		
Hubbard Y1			56.50		
Minnequa C6	58.00	59.00	59.00		
Monessen P6	56.00				
Neville Isl. P4	56.00	56.50	56.50		
Pittsburgh U1	56.00			57.00	
Sharpville S3	56.00	56.50	56.50	57.00	
Steelton B3	58.00	58.50	59.00	59.50	64.00
Swadeland A2	58.00	58.50	59.00	59.50	
Toledo 14	56.00	56.50	56.50	57.00	
Troy, N. Y. R3	58.00	58.50	59.00	59.50	64.00
Youngstown Y1			56.50	57.00	
N. Tonawanda T1		56.50	57.00		

DIFFERENTIALS: Add 50¢ per ton for each 0.25 pct silicon over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct) 50¢ per ton for each 0.50 pct manganese over 1 pct., \$2 per ton for .05 to 0.75 pct nickel, \$1 for each additional 0.25 pct nickel. Subtract 38¢ per ton for phosphorus, content 0.70 and over.

Silvery Iron: Buffalo, H1, \$68.25; Jackson, J1, G1, \$67.00. Add \$1.50 per ton for each 0.50 pct silicon over base (6.91 to 6.50 pct) up to 17 pct. Add \$1 per ton for 0.75 pct. or more phosphorus. Add 75¢ for each 0.50 pct. manganese over 1.0 pct. Bessemer ferroalloy prices are \$1 over comparable silvery iron.

STAINLESS STEEL

Base price cents per lb. f.o.b. mill

Product	301	302	303	304	316	321	347	410	416	430
Ingot, rerolling	16.25	17.25	18.75	18.25	28.00	22.75	24.50	14.00		14.25
Slabs, billets, rerolling	20.50	22.75	24.75	23.75	36.25	29.50	32.25	18.25		18.50
Forg. discs, die blocks, rings	38.50	38.50	41.50	40.50	60.00	45.50	50.75	31.00	31.75	31.75
Billets, forging	29.50	29.75	32.25	31.00	46.50	35.25	39.50	24.00	24.50	24.50
Bars, wires, structurals	35.25	35.50	38.25	37.25	55.50	42.00	46.75	28.75	29.25	29.25
Plates	37.25	37.50	39.75	39.75	58.75	45.75	51.25	30.00	30.50	30.50
Sheets	41.25	41.50	48.75	43.75	62.75	50.50	59.25	34.25	41.25	34.75
Strip, hot-rolled	29.75	32.00	36.75	34.25	53.25	41.00	46.50	26.25		27.00
Strip, cold-rolled	38.25	41.50	45.50	43.75	62.75-63.00	50.50-50.75	59.25	34.25	41.25	34.75

STAINLESS STEEL PRODUCING POINTS:

Sheets: Midland, Pa., C11; Brackenridge, Pa., A3; Butler, Pa., A7; McKeesport, Pa., U1; Washington, Pa., W2, J1; Baltimore, El; Middletown, O., A7; Massillon, O., R3; Gary, U1; Bridgeville, Pa., U2; New Castle, Ind., I2; Ft. Wayne, J4.

Strip: Midland, Pa., C11; Cleveland, A5; Carnegie, Pa., S9; McKeesport, Pa., F1; Reading, Pa., C2; Washington, Pa., W2; W. Lechburg, Pa., A3; Bridgeville, Pa., U2; Detroit, M2; Canton-Massillon, O., R3; Middletown, O., A7; Harrison, N. J., D3; Youngstown, C5; Sharon, Pa., S7; Butler, Pa., A7; Wallingford, Conn., U3 (25¢ per lb higher) W1 (25¢ per lb higher); New Bedford, Mass., R6.

Bar: Baltimore, A7; Duquesne, Pa., U1; Munhall, Pa., U1; Reading, Pa., C2; Titusville, Pa., U2; Washington, Pa., J2; McKeesport, Pa., U1, F1; Bridgeville, Pa., U2; Dunkirk, N. Y., A3; Massillon, O., R3; Chicago, U1; Syracuse, N. Y., C11; Watervliet, N. Y., A3; Waukegan, A5; Canton, O., T5; Ft. Wayne, I4.

Wire: Waukegan, A5; Massillon, O., R3; McKeesport, Pa., F1; Ft. Wayne, J4; Harrison, N. J., D3; Baltimore, A7; Dunkirk, A3; Monessen, P1; Syracuse, C11; Bridgeville, U2.

Structurals: Baltimore, A7; Massillon, O., R3; Chicago, Ill., J4; Watervliet, N. Y., A3; Syracuse, C11.

Plates: Brackenridge, Pa., A3; Chicago, U1; Munhall, Pa., U1; Midland, Pa., C11; New Castle, Ind., I2; Middletown, A7; Washington, Pa., J2; Cleveland, Massillon, R3; Coatesville, Pa., C15.

Forged discs, die blocks, rings: Pittsburgh, C11; Syracuse, C11; Ferndale, Mich., A3; Washington, Pa., J2.

Forging billets: Midland, Pa., C11; Baltimore, A7; Washington, Pa., J2; McKeesport, F1; Massillon, Canton, O., R3; Watervliet, A3; Pittsburgh, Chicago, U1; Syracuse, C11.



Solution to a Hot Solution Problem

Carpenter Stainless No. 20 Handles Hot Sulphuric Acid—Solves Corrosion Problem

In this spray booth metal parts are cleaned by a solution of hot sulphuric acid. Booth is fabricated from Carpenter Stainless No. 20 Cb pipe, tubing, sheet and plate.

When you have sulphuric acid or other strong corrosives to handle—or are fabricating equipment to do the job—remember Carpenter Stainless No. 20—also available in bar, wire and strip.

Highly resistant to concentrations or solutions of H_2SO_4 , and unaffected by a long list of other highly corrosive acids, liquids, gases, Carpenter Stainless No. 20 cuts the cost of corrosion control. What's more, it has the ductility and general workability for trouble-free bending, machining, threading, welding and brazing.

Now is the time to get complete information on Carpenter Stainless No. 20 Cb in its many forms—see what it has to offer you. Write today for your copy of the Carpenter Stainless No. 20 handbook. It contains data on physicals, corrosion resistance, fabrication.



The Carpenter Steel Company, Alloy Tube Division, Union, N.J.
Export Dept.: The Carpenter Steel Co., Port Washington, N. Y.—“CARSTEELCO”



Stainless Tubing & Pipe

IRON AGE

STEEL
PRICES(Effective
Aug. 10, 1954)

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

	BILLETS, BLOOMS, SLABS			PIL- ING	SHAPES STRUCTURALS			STRIP					
	Carbon Re-rolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton		Carbon	Hi Str. Low Alloy	Carbon Wide- Flange	Hot- rolled	Cold- rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot- rolled	Alloy Cold- rolled
EAST	Bethlehem, Pa.		\$36.00 B3		4.30 B3	6.45 B3	4.30 B3						
	Buffalo, N. Y.	\$64.00 B3	\$78.00 B3, R3	\$86.00 B3, R3	5.075 B3	4.30 B3	6.45 B3	4.30 B3	4.05 B3,R3	5.75 B3,R7	6.15 B3	8.425 B3	
	Claymont, Del.												
	Coatesville, Pa.												
	Conschocken, Pa.							4.175 A2		6.15 A2			
	New Bedford, Mass.								6.20 R6				
	Harrison, N. J.												
	Johnstown, Pa.	\$64.00 B3	\$78.00 B3	\$86.00 B3		4.30 B3	6.45 B3	4.05 B3					
	Fairless, Pa.												
	New Haven, Conn.								6.20 D1 6.50 A5				
	Phoenixville, Pa.				3.95 P2		3.95 P2						
	Sparrows Pt., Md.							4.05 B3	5.75 B3	6.15 B3	8.425 B3		
	Wallingford, Conn.								6.20 W1				
	Worcester, Mass. Pawtucket, R. I.								6.30 N7 6.60 A5				12.75 A5 12.80 N7
MIDDLE WEST	Alton, Ill.							4.225 L1					
	Ashland, Ky.							4.05 A7					
	Canton-Massillon, Dover, Ohio		\$82.00 T3 \$86.00 R3										12.45 G4
	Chicago, Ill.	\$64.00 U1	\$78.00 R3, U1,W8	\$86.00 U1, W8,R3	5.075 U1	4.25 U1, W8	6.40 U1, Y1	4.25 U1	4.05 A1,N4, W8	5.85 A1			
	Cleveland, Ohio		\$78.00 R3							5.75 A5,J3	8.60 A5		12.45 A5
	Detroit, Mich.		\$88.00 R5					4.20 G3,M2	5.90 D1,D2, G3,M2,P11	6.30 G3	8.35 D2 8.75 G3		
	Duluth, Minn.												
	Gary, Ind. Harbor, Indiana	\$64.00 U1	\$78.00 U1	\$86.00 U1, Y1	5.075 I3	4.25 I3, U1	6.40 U1, I3,Y1	4.05 I3, U1,Y1	6.00 I3	6.15 U1, I3,Y1	8.60 Y1	6.70 U1, Y1	
	Sterling, Ill.							4.15 N4					
	Indianapolis, Ind.								5.90 C3				
	Newport, Ky.											6.70 N5	
	Middletown, Ohio								5.75 A7				
	Niles, Warren, Ohio Sharon, Pa.							4.05 S1,R3	5.75 S1,R3, T4	6.15 S1, R3	8.60 S1,R3	6.70 S1	12.45 S1
	Pittsburgh, Pa. Midland, Pa. Butler, Pa.	\$64.00 U1, J3	\$78.00 J3, U1,C11	\$86.00 U1, C11	5.075 U1	4.25 J3, U1	6.40 J3, U1	4.25 U1	4.05 S7,P6	5.75 B4,J3, S7		6.70 S9	12.45 S9
	Portsmouth, Ohio							4.05 P7	5.75 P7				
	Weirton, Wheeling, Follansbee, W. Va.					4.25 W3		4.05 W3	5.75 F3,W3	6.15 W3	8.60 W3		
	Youngstown, Ohio		\$78.00 C10	\$86.00 Y1, C10		4.25 Y1	6.40 Y1	4.05 U1,Y1	5.75 Y1,C5	6.15 U1, Y1	8.60 Y1	6.70 U1, Y1	12.45 C5
WEST	Fontana, Cal.	\$72.00 K1	\$86.00 K1	\$105.00 K1		4.90 K1	7.05 K1	5.25 K1	4.825 K1	7.65 K1	7.25 K1	8.10 K1	14.55 K1
	Geneva, Utah		\$78.00 C7			4.25 C7	6.40 C7						
	Kansas City, Mo.					4.85 S2	7.00 S2		4.65 S2			7.30 S2	
	Los Angeles, Torrance, Cal.		\$87.50 B2	\$106.00 B2		4.95 B2, C7	7.10 B2		4.80 B2,C7	7.90 C1			
	Minneapolis, Cole.					4.70 C6			5.15 C6				
	San Francisco, Niles, Pittsburg, Cal.		\$87.50 B2			4.90 B2 4.95 P9	7.05 B2		4.90 B2,C7				
	Seattle, Wash.		\$91.50 B2			5.00 B2	7.15 B2		5.05 B2,P12				
	Atlanta, Ga.							4.25 A8					
SOUTH	Fairfield, Ala. City, Birmingham, Ala.	\$64.00 T2	\$78.00 T2			4.25 T2,C16 4.28 R3	6.40 T2		4.05 R3, T2,C16	6.15 T2			
	Houston, Tex.		\$85.00 S2	\$93.00 S2		4.65 S2	6.85 S2	4.45 S2				7.10 S2	

STEEL
PRICES(Effective
Aug. 10, 1954)

SHEETS

WIRE
ROD

TINPLATE†

BLACK
PLATEHot-rolled
18 ga.
& hvyr.Cold-
rolledGalvanized
10 ga.Enamel-
ing
12 ga.Long
Terne
10 ga.Hi Str.
Low Alloy
H.R.Hi Str.
Low Alloy
C.R.Hi Str.
Low Alloy
Galv.Hot-
rolled
19 ga.Cokes*
1.25-lb.
base boxElectro*
0.25-lb.
base boxHolloware
Enameling
29 ga.

Bethlehem, Pa.

Buffalo, N. Y.

Claymont, Del.

Coatesville, Pa.

Cranhoben, Pa.

Harrisburg, Pa.

Hartford, Conn.

Johnstown, Pa.

Fairless, Pa.

New Haven, Conn.

Phoenixville, Pa.

Sparrows Pt., Md.

Worcester, Mass.

Trenton, N. J.

Alton, Ill.

Ashland, Ky.

Canton-Massillon,
Dover, Ohio

Chicago, Joliet, Ill.

Sterling, Ill.

Cleveland, Ohio

Detroit, Mich.

Newport, Ky.

Gary, Ind. Harbor,
Indiana

Granite City, Ill.

Kokomo, Ind.

Mansfield, Ohio

Middletown, Ohio

Niles, Ohio

Sharon, Pa.

Pittsburgh, Pa.

Midland, Pa.

Butler, Pa.

Portsmouth, Ohio

Weirton, Wheeling,
Fallanabee, W. Va.

Youngstown, Ohio

Fontana, Cal.

Geneva, Utah

Kansas City, Mo.

Los Angeles,
Torrance, Cal.

Minneapolis, Colo.

San Francisco, Niles,
Pittsburg, Cal.

Seattle, Wash.

Atlanta, Ga.

Fairfield, Ala.

Alabama City, Ala.

Houston, Texas

EAST

MIDDLE WEST

WEST

SOUTH

† Special coated mfg.
terno deduct 95¢ from
1.25-lb coke base box
price. Can-making quality
blackplate 55 to 128 lb
deduct \$2.20 from 1.25-lb
coke base box.
* COKES: 1.50 lb
add 25¢.
ELECTRO: 0.50-lb add
25¢; 0.75-lb add 65¢;
1.00-lb add \$1.20.

UNIVERSITY OF MICHIGAN LIBRARIES

IRON AGE

STEEL
PRICES(Effective
Aug. 10, 1954)

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

	BARS						PLATES				WIRE
	Carbon Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	
EAST	Bethlehem, Pa.			5.075 B3	6.625 B3	6.45 B3					
	Buffalo, N. Y.	4.30 B3 4.33 R3	4.30 B3 4.33 R3	5.45 B5	5.075 B3 5.105 R3	6.625 B3, B5 6.45 B3	4.225 B3			6.45 B3	5.75 W6
	Claymont, Del.						4.225 C4		5.80 C4		
	Coatesville, Pa.						4.225 L4		5.80 L4		
	Conschocken, Pa.						4.225 A2	5.275 A2		6.45 A2	
	Harriaburg, Pa.						3.975C3	5.275C3			
	Hartford, Conn.		5.90 R3		6.925 R3						
	Johntown, Pa.	4.30 B3	4.30 B3		5.075 B3	6.45 B3	4.225 B3		5.80 B3	6.45 B3	5.75 B3
	Fairless, Pa.	4.45 U1	4.45 U1		5.225 U1						
	Newark, N. J.			5.85 W10		6.80 W10					
	Camden, N. J.			5.85 P10							
	Putnam, Conn.			5.95 W10							
	Sparrows Pt., Md.		4.30 B3				4.225 B3		5.80 B3	6.45 B3	5.85 B3
	Palmer, Worcester, Mansfield, Mass.			5.85W11 5.95B5		6.925 A5 7.075 B5					6.05 A5, W6
MIDDLE WEST	Alton, Ill.	4.50 L1									5.925 L1
	Ashland, Newport, Ky.						4.225 A7, N5		5.80 N5		
	Canton-Massillon, Mansfield, Ohio			5.40 R2 5.44 R3	4.875 T5 5.115 R3	6.325 T5 6.625 R2 6.665 R3	4.225 E2				
	Chicago, Joliet, Ill.	4.30 U1, N4, W8 4.37 R3	4.30 N4 4.37 R3	5.40 A5, W10, W8, B5, L2	5.075 U1, W8 5.145 R3	6.625 A5, W8, W10, L2, B5	4.225 U1, W8, I3, A1	5.275 U1	5.80 U1	6.45 U1	5.75 A5, R3, N4, W7
	Cleveland, Ohio	4.36 R3	4.36 R3	5.40 A5, C13		6.625 A5 6.665 C13	4.225 J3 4.285 R3	5.275 J3		6.45 J3	5.75 A5, C13
	Detroit, Mich.	4.45 R5, G3		5.55 R5 5.60 B5, P8 5.65 P3	5.175 R5 5.225 G3	6.725 R5 6.825 B5, P3, P8	6.60 G3	4.375 G3		6.60 G3	
	Duluth, Minn.										5.75 A5
	Gary, Ind. Harbor, Crawfordsville	4.30 I3, U1, Y1	4.30 I3, U1, Y1	5.40 M5 5.47 R3	5.075 I3, U1, Y1	6.525 M5 6.695 R3	6.45 U1, I3, Y1	4.225 I3, U1, Y1	5.275 I3	5.80 U1	6.45 U1, I3, Y1
	Granite City, Ill.						4.425 G2				
	Kokomo, Ind.										5.85 C9
	Sterling, Ill.	4.40 N4	4.40 N4								5.85 N4
	Niles, Ohio Sharon, Pa.	4.34 R3					4.225 S1		5.80 S1	6.45 S1	
	Pittsburgh, Pa. Midland, Pa.	4.30 J3, U1, C11	4.30 J3, U1	5.40 A5, C8, C11 J3, W10, B4 5.46 R3	5.075 U1, C11	6.625 A5, C11, W10, C8 6.685 R3	6.45 J3, U1	4.225 J3, U1	5.275 U1	5.80 U1	6.45 J3, U1
	Portsmouth, Ohio										5.75 P7
	Weirton, Wheeling, Follansbee, W. Va.	4.30 W3					4.225 W3, W5				
	Youngstown, Ohio	4.30 U1, Y1, C10 4.35 R3	4.30 U1, Y1 4.35 R3	5.40 F2, Y1, C10	5.075 U1, Y1, C10	6.625 Y1, C10 6.665 F2	6.45 U1, Y1	4.225 U1, Y1		5.80 Y1	6.45 Y1
WEST	Emeryville, Cal.	5.05 J5	5.05 J5								
	Fontana, Cal.	5.00 K1	5.00 K1		6.125 K1		7.70 K1	4.875 K1		6.45 K1	7.15 K1
	Geneva, Utah						4.225 C7			6.45 C7	
	Kansas City, Mo.	4.90 S2	4.90 S2		5.675 S2		7.05 S2				6.35 S2
	Los Angeles, Torrance, Cal.	5.00 B2, C7	5.00 B2, C7	6.85 R3 7.16 R3	6.125 B2		7.15 B2				6.70 B2
	Minnequa, Colo.	4.75 C6	4.75 C6				5.075 C6				5.90 C6
	Portland, Ore.	4.90 O2									
	San Francisco, Niles, Pittsburg, Cal.	5.00 C7, P9 5.05 B2	5.00 C7, P9 5.05 B2			7.20 B2					6.70 C7
	Seattle, Wash.	5.05 B2, P12, N6	5.05 B2, P12			7.20 B2	5.125 B2		6.70 B2	7.35 B2	
	Atlanta, Ga.	4.50 A8	4.50 A8								5.95 A8
SOUTH	Fairfield, Ala. City, Birmingham, Ala.	4.30 T2, C16 4.33 R3	4.30 T2, C16 4.33 R3			6.45 T2	4.225 T2 4.255 R3			6.45 T2	5.75 R3, T2
	Houston, Ft. Worth, Lone Star, Tex.	4.70 S2	4.70 S2		5.475 S2	6.85 S2	4.40 L3 4.625 S2		6.20 S2	6.85 S2	6.25 S2

Steel Prices

(Effective Aug. 10, 1954)

Key to Steel Producers

With Principal Offices

- A1 Acme Steel Co., Chicago
A2 Alan Wood Steel Co., Conshohocken, Pa.
A3 Allegheny Ludlum Steel Corp., Pittsburgh
A4 American Clad Metals Co., Carnegie, Pa.
A5 American Steel & Wire Div., Cleveland
A6 Angell Nail & Chaplet Co., Cleveland
A7 Armco Steel Corp., Middletown, O.
A8 Atlantic Steel Co., Atlanta, Ga.
B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.
B2 Bethlehem Pacific Coast Steel Corp., San Francisco
B3 Bethlehem Steel Co., Bethlehem, Pa.
B4 Blair Strip Steel Co., New Castle, Pa.
B5 Bliss & Laughlin, Inc., Harvey, Ill.
C1 Calstrip Steel Corp., Los Angeles
C2 Carpenter Steel Co., Reading, Pa.
C3 Central Iron & Steel Co., Harrisburg, Pa.
C4 Claymont Products Dept., Claymont, Del.
C5 Cold Metal Products Co., Youngstown, O.
C6 Colorado Fuel & Iron Corp., Denver
C7 Columbia Geneva Steel Div., San Francisco
C8 Columbia Steel & Shafing Co., Pittsburgh
C9 Continental Steel Corp., Kokomo, Ind.
C10 Copperweld Steel Co., Pittsburgh, Pa.
C11 Crucible Steel Co. of America, New York
C12 Cumberland Steel Co., Cumberland, Md.
C13 Cuyahoga Steel & Wire Co., Cleveland
C14 Compressed Steel Shafting Co., Readville, Mass.
C15 G. O. Carlson, Inc., Thorndale, Pa.
C16 Connors Steel Div., Birmingham
D1 Detroit Steel Corp., Detroit
D2 Detroit Tube & Steel Div., Detroit
D3 Driver Harris Co., Harrison, N. J.
D4 Dickson Weatherproof Nail Co., Evanston, Ill.
E1 Eastern Stainless Steel Corp., Baltimore
E2 Empire Steel Co., Mansfield, O.
F1 Firth Sterling, Inc., McKeesport, Pa.
F2 Fitzsimmons Steel Corp., Youngstown
F3 Follansbee Steel Corp., Follansbee, W. Va.
G1 Globe Iron Co., Jackson, O.
G2 Granite City Steel Co., Granite City, Ill.
G3 Great Lakes Steel Corp., Detroit
G4 Greer Steel Co., Dover, O.
H1 Hanna Furnace Corp., Detroit
I1 Ingersoll Steel Div., Chicago
I2 Inland Steel Co., Chicago
I3 Interlake Iron Corp., Cleveland
J1 Jackson Iron & Steel Co., Jackson, O.
J2 Jessop Steel Corp., Washington, Pa.
J3 Jones & Laughlin Steel Corp., Pittsburgh
J4 Joslyn Mfg. & Supply Co., Chicago
J5 Judson Steel Corp., Emeryville, Calif.
K1 Kaiser Steel Corp., Fontana, Cal.
K2 Keystone Steel & Wire Co., Peoria
K3 Koppers Co., Granite City, Ill.
L1 Laclede Steel Co., St. Louis
L2 La Salle Steel Co., Chicago
L3 Lone Star Steel Co., Dallas
L4 Lukens Steel Co., Coatesville, Pa.
M1 Mahoning Valley Steel Co., Niles, O.
M2 McLouth Steel Corp., Detroit
M3 Mercer Tube & Mfg. Co., Sharon, Pa.
M4 Mid-States Steel & Wire Co., Crawfordsville, Ind.
M5 Monarch Steel Co., Inc., Hammond, Ind.
M6 Mystic Iron Works, Everett, Mass.
N1 National Supply Co., Pittsburgh
N2 National Tube Div., Pittsburgh
N3 Niles Rolling Mill Div., Niles, O.
N4 Northwestern Steel & Wire Co., Sterling, Ill.
N5 Newport Steel Corp., Newport, Ky.
N6 Northwest Steel Rolling Mills, Seattle
N7 Newman Crosby Steel Co., Pawtucket, R. I.
O1 Oliver Iron & Steel Co., Pittsburgh
O2 Oregon Steel Mills, Portland
P1 Page Steel & Wire Div., Monessen, Pa.
P2 Phoenix Iron & Steel Co., Phoenixville, Pa.
P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
P4 Pittsburgh Coke & Chemical Co., Pittsburgh
P5 Pittsburgh Screw & Bolt Co., Pittsburgh
P6 Pittsburgh Steel Co., Pittsburgh
P7 Portsmouth Div., Detroit Steel Corp., Detroit
P8 Plymouth Steel Co., Detroit
P9 Pacific States Steel Co., Niles, Cal.
P10 Precision Drawn Steel Co., Camden, N. J.
P11 Production Steel Strip Corp., Detroit
P12 Pacific Steel Rolling Mills, Seattle
R1 Reeves Steel & Mfg. Co., Dover, O.
R2 Reliance Div., Eaton Mfg. Co., Massillon, O.
R3 Republic Steel Corp., Cleveland
R4 Roebbing Sons Co., John A., Trenton, N. J.
R5 Rotary Electric Steel Co., Detroit
R6 Rodney Metals, Inc., New Bedford, Mass.
R7 Rome Strip Steel Co., Rome, N. Y.
S1 Sharon Steel Corp., Sharon, Pa.
S2 Sheffield Steel Corp., Kansas City
S3 Sherrill Furnace Co., Pittsburgh
S4 Simonds Saw & Steel Co., Fitchburg, Mass.
S5 Sweet's Steel Co., Williamsport, Pa.
S6 Standard Forging Corp., Chicago
S7 Stanley Works, New Britain, Conn.
S8 Superior Drawn Steel Co., Monaca, Pa.
S9 Superior Steel Corp., Carnegie, Pa.
T1 Tonawanda Iron Div., N. Tonawanda, N. Y.
T2 Tennessee Coal & Iron Div., Fairfield
T3 Tennessee Products & Chem. Corp., Nashville
T4 Thomas Strip Div., Warren, O.
T5 Timken Steel & Tube Div., Canton, O.
T6 Tremont Nail Co., Wareham, Mass.
T7 Texas Steel Co., Fort Worth
U1 United States Steel Corp., Pittsburgh
U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.
U3 Ulbrich Stainless Steels, Wallingford, Conn.
U4 U. S. Pipe & Foundry Co., Birmingham
W1 Wallingford Steel Co., Wallingford, Conn.
W2 Washington Steel Corp., Washington, Pa.
W3 Weirton Steel Co., Weirton, W. Va.
W4 Wheatland Tube Co., Wheatland, Pa.
W5 Wheeling Steel Corp., Wheeling, W. Va.
W6 Wickwire Spencer Steel Div., Buffalo
W7 Wilson Steel & Wire Co., Chicago
W8 Wisconsin Steel Co., S. Chicago, Ill.
W9 Woodward Iron Co., Woodward, Ala.
W10 Wycoff Steel Co., Pittsburgh
W11 Worcester Pressed Steel Co., Worcester, Mass.
Y1 Youngstown Sheet & Tube Co., Youngstown

PIPE AND TUBING

Base discounts (pt) f.o.b. mills. Base price about \$200 per net ton.

	BUTTWELD														SEAMLESS									
	1/2 In.		3/4 In.		1 In.		1 1/4 In.		1 1/2 In.		2 In.		2 1/2-3 In.		2 In.		2 1/2 In.		3 In.		3 1/2-4 In.			
	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.		
STANDARD T. & C.																								
Sparrows Pt. B3	21.75	6.5	24.75	10.5	27.25	14.0	29.75	14.75	30.25	15.75	30.75	16.25	32.25	16.0										
Youngtown R3	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0										
Fontana K1	10.75	+4.5	13.75	+0.5	16.25	3.0	18.75	3.75	19.25	4.75	19.75	5.25	21.25	5.0										
Pittsburgh J3	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0	13.5	+1.50	17.5	0.75	20.0	3.25	21.5	4.75		
Alton, Ill. L1	21.75	6.5	24.75	10.5	27.25	14.0	29.75	14.75	30.25	15.75	30.75	16.25	32.25	16.0										
Sharon M3	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0										
Fairless N2	21.75	6.5	24.75	10.5	27.25	14.0	29.75	14.75	30.25	15.75	30.75	16.25	32.25	16.0										
Pittsburgh N1	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0	13.5	+1.50	17.5	0.75	20.0	3.25	21.5	4.75		
Wheeling W5	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0										
Wheatland W4	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0										
Youngtown Y1	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0	13.5	+1.50	17.5	0.75	20.0	3.25	21.5	4.75		
Indiana Harbor Y1	22.75	7.5	25.75	11.5	28.25	15.0	30.75	15.75	31.25	16.75	31.75	17.25	33.25	17.0										
Lorain N2	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0	13.5	+1.50	17.5	0.75	20.0	3.25	21.5	4.75		
EXTRA STRONG PLAIN ENDS																								
Sparrows Pt. B3	25.25	11.5	29.25	15.5	31.25	19.0	31.75	17.75	32.25	18.75	32.75	19.25	33.25	18.0										
Youngtown R3	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.25	35.25	20.0										
Fairless N2	25.25	11.5	29.25	15.5	31.25	19.0	31.75	17.75	32.25	18.75	32.75	19.25	33.25	18.0										
Fontana K1	14.25		18.25		20.25		20.75		21.25		21.75		22.25											
Pittsburgh J3	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.25	35.25	20.0	14.0		19.0	3.25	21.5	5.75	26.5	10.75		
Alton, Ill. L1	25.25	11.5	29.25	15.5	31.25	19.0	31.75	17.75	32.25	18.75	32.75	19.25	33.25	18.0										
Sharon M3	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.25	35.25	20.0										
Pittsburgh N1	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.25	35.25	20.0	14.0		19.0	3.25	21.5	5.75	26.5	10.75		
Wheeling W5	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.25	35.25	20.0										
Wheatland W4	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.25	35.25	20.0										
Youngtown Y1	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.25	35.25	20.0	14.0		19.0	3.25	21.5	5.75	26.5	10.75		
Indiana Harbor Y1	26.25	12.5	30.25	16.5	32.25	20.0	32.75	18.75	33.25	19.75	33.75	20.75	34.25	19.0										
Lorain N2	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.25	35.25	20.0	14.0		19.0	3.25	21.5	5.75	26.5	10.75		

Threads only, butt weld and seamless 2 1/4 pt. higher discount. Plain ends, butt weld and seamless, 3-in. and under, 4 1/2 pt. higher discount. Butt weld jobbers' discount, 5 pct. Galvanized discounts based on zinc price in range of over 9¢ to 11¢ incl. per lb. East St. Louis. For each 2¢ change in zinc, discounts vary as follows: 1/2, 3/4 and 1-in., 2 pt.; 1 1/4, 1 1/2 and 2-in., 1 1/2 pt.; 2 1/2 and 3-in., 1 pt. e.g., zinc price in range of over 11¢ to 13¢ would lower discounts; zinc price in range of over 7¢ to 9¢ would increase discounts. East St. Louis zinc price now 11.00¢ per lb.

Steel Prices

(Effective Aug. 10, 1954)

To identify producers, see Key on preceding page

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Screw Spikes	Tie Plates	Track Bolts Treated
Bessemer U1	4.45	5.35	5.425				
So. Chicago R3				7.30			
Ensley T2	4.45	5.35					
Fairfield T2		5.35		7.30	5.275		
Gary U1	4.45	5.35			5.275		
Ind. Harbor B3	4.45		5.425	7.30	5.275		
Johnstown B3		5.35					
Joliet U1		5.35	5.425				
Kansas City S2				7.30			11.00
Lackawanna B3	4.45	5.35	5.425		5.275		
Minnequa C6	4.45	5.85	5.425	7.30	5.275	11.50	
Pittsburgh O1					11.00		11.50
Pittsburgh P5					11.00		11.50
Pittsburgh J3				7.30			
Seattle B2				7.80	5.425	11.50	
Steelton B3	4.45		5.425		5.275		
Struthers Y1				7.30			
Terrance C7					5.425		
Williamsport S5		5.35					
Youngstown R3				7.30			

ELECTRICAL SHEETS

22-Gage	F.o.b. Mill Cents Per Lb	Hot-Rolled (Cut Lengths)*	Cold-Reduced (Coiled or Cut Length)	
			Semi- Processed	Fully Processed
Field		8.025	8.225	
Armature		8.50	8.75	9.25
Elect.		9.10	9.35	9.85
Motor		10.10	10.35	10.85
Dynamo		11.00	11.25	11.75
Trans. 72		11.95	12.20	12.70
Trans. 65		12.50	Grain Oriented	
Trans. 58		13.00	Trans. 80	16.60
Trans. 52		14.00	Trans. 73	17.10

Producing points: Bosch Bottom (W5); Brackenridge (A5); Granite City (G2); Indiana Harbor (I3); Mansfield (E2); Newport, Ky. (N5); Niles, O. (N3); Vandergrift (U1); Warren, O. (R3); Zanesville (A7).
* Coils 7½ higher.

CLAD STEEL

Stainless-carbon	Plate	Sheet
No. 304, 20 pct.		
Coatesville, Pa., L4		32.7
Washington, Pa., J2		
Claymont, Del., C4		
New Castle, Ind., J2		32.50
Nickel-carbon		
10 pct. Coatesville, Pa., L4		37.5
Inconel-carbon		
10 pct., Coatesville, Pa., L4		46.10
Monel-carbon		
10 pct. Coatesville, Pa., L4		38.90

* Includes annealing and pickling, sandblasting.

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard & Coated Nails	Woven Wire Fence 9-15½ ga.	4" Fence Posts	Single Loop Bale Ties	Galv. Barbed and Twisted Barbed Wire	Merch. Wire Ann'd	Merch. Wire* Galv.
Alabama City R3	137	146	155	159	6.90	7.30	
Aliquippa, Pa. J3	137	149		156	6.90	7.025	
Atlanta A8	139	151		157	164	7.00	7.525
Bartonville K2	139	151		157	164	7.00	7.525
Buffalo W6					6.90	7.30	
Chicago, Ill. N4	137	149	155	162	6.90	7.45	
Cleveland A5	142					6.90	
Crawfordville M4	139	151		157	159	7.00	7.55
Donora, Pa. A5	137	146		155	159	6.90	7.30
Duluth A5	137	146	150	155	159	6.90	7.30
Fairfield, Ala. T2	137	146		155	159	6.90	7.30
Galveston D4	139						
Houston S2	145	154		167	7.30	7.75	
Johnstown, Pa. B3	137	149		162	6.90	7.45	
Joliet, Ill. A5	137	146		155	159	6.90	7.30
Kokomo, Ind. C9	139	148		157	161	7.00	7.55
Los Angeles B5					7.85		
Kansas City S2	148	158		167	171	7.50	
Minnequa C6	142	154	150	160	168	7.15	7.55
Monacaon P6	137	151		163	6.90	7.45	
Moline, Ill. R3			145				
Pittsburg, Cal. C7	156	169		179	179	7.85	8.25
Portsmouth P7						6.90	7.90
Rankin, Pa. A5	137	146		159	159	6.90	7.30
So. Chicago R3	137	146	145	155	159	6.90	7.30
S. San Francisco C6					179		
Sparrows Pt. B3	130			157	164	7.00	7.55
Struthers, O. Y1					6.90	7.55	
Worcester A5	143				7.20		
Williamsport, Pa. S5			150				

Cut Nails, carloads, base \$8.30 per keg at Conshohocken, Pa. (A2).
* Alabama City and So. Chicago don't include zinc extra.

Galvanized products computed with zinc at 11.0¢ per lb.

C-R SPRING STEEL

Cents Per Lb F.o.b. Mill	CARBON CONTENT				
	0.26-0.40	0.41-0.60	0.61-0.80	0.81-1.05	1.06-1.35
Bridgeport, Conn. S7*	5.75	8.05	9.00	11.15	13.85
Buffalo, N. Y. R7	5.75	8.05	9.00	10.95	13.25
Carnegie, Pa. S9		8.05	9.00	11.15	13.85
Cleveland A5	5.75	8.05	9.00	11.15	13.85
Detroit D1	5.90	8.25	9.20	10.95	
Detroit D2	5.90	8.25	9.20		
Harrison, N. J. C11			9.30	11.45	14.15
Indianapolis C5	5.75	8.05	9.00	10.95	
New Castle, Pa. B4	5.75	8.05	9.00	10.95	
New Haven, Conn. D1	6.20	8.35	9.30	11.25	
Pawtucket, R. I. N7	6.30	8.35	9.30	11.45	14.15
Riverdale, Ill. A1	5.85	8.05	9.00	11.15	13.85
Sharon, Pa. S1	5.75	8.05	9.00	10.95	13.25
Trenton R4		8.35	9.30	11.25	13.40
Wallingford W1	6.20	8.35	9.30	11.45	14.15
Warren, Ohio T4	5.75	8.05	9.00	10.95	13.25
Weirton, W. Va. W3	5.85	8.05	9.00	10.95	13.25
Worcester, Mass. A5	6.60	8.35	9.30	11.45	14.15
Youngstown C5	5.75	8.05	9.00	10.95	

* Sold on Pittsburgh base.

BOILER TUBES

\$ per 100 ft. carload lots, cut 10 to 24 ft. F.o.b. Mill	Size		Seamless		Elec. Weld	
	OD- In.	B.W. Ga.	H.R.	C.D.	H.R.	C.D.
Babcock & Wilcox	2	13	28.33	33.97	26.51	31.95
	2½	12	38.15	45.74	35.70	43.67
	3	12	44.05	52.82	41.23	49.73
	3½	11	51.43	61.66	48.13	58.04
	4	10	68.29	81.28	63.92	77.10
National Tube	2	13	28.33	33.97	26.51	
	2½	12	38.15	45.74	35.70	
	3	12	44.05	52.82	41.23	
	3½	11	51.43	61.66	48.13	
	4	10	68.29	81.28	63.92	
Pittsburgh Steel	2	13	28.33	33.97		
	2½	12	38.15	45.74		
	3	12	44.05	52.82		
	3½	11	51.43	61.66		
	4	10	68.29	81.28		

WARE-HOUSES

Base price, f.o.b., dollars per 100 lb.

HOUSES		Sheets			Strip		Plates	Shapes	Bars	Alloy Bars					
Cities	City Delivery Charge	Hot-Rolled	Cold-Rolled (15 gage)	Galvanized (10 gage)	Hot-Rolled	Cold-Rolled		Standard Structural	Hot-Rolled	Cold- Finished	Hot-Rolled A 4615 As Rolled	Hot-Rolled A 4140 Annealed	Cold-Drawn A 4615 As Rolled	Cold-Drawn A 4140 Annealed	
Baltimore	\$.20	6.22	7.51	7.78	6.89		6.57	6.92	6.88	8.52					
Birmingham	.15	6.35	7.35	8.25	6.60	9.60	6.65	6.65	6.50	9.00					
Boston	.10	7.23	8.23	9.42	7.47	9.65	7.34	7.49	7.20	8.60	12.45	15.15	15.10		
Buffalo	.20	6.35	7.40	8.80	6.70	9.85	6.65	6.70	6.50	7.85	12.50	12.46	14.85	14.30	
Chicago	.20	6.40	7.45	8.84	6.75		6.70	6.77	6.55	7.90			14.80	14.60	
		6.38	7.38	8.30	6.62		6.52	6.69	6.51	7.50	12.25	11.90	14.60	14.55	
Cincinnati	.15	6.49	7.37	8.25	6.86		6.81	6.91	6.75	7.80	12.55	12.15	14.90	14.80	
		6.53	7.42	8.30	6.91		6.86	6.80	7.85		12.20		14.85	14.61	
Cleveland	.20	6.38	7.38	8.45	6.72		6.69	7.02	6.57	7.60	11.96				
Denver		7.85	8.85	10.02	8.20		7.95	7.95	8.05	9.05					
Detroit	.20	6.57	7.57	8.50	6.90		6.80	7.16	6.79	7.77	12.45	12.10	14.80	14.75	
				8.58			6.85								
Houston	.20	7.35	7.65	9.93	7.70		7.35	7.60	7.70	9.50		13.10			
			7.80							9.60					
Kansas City	.20	7.05	8.05	8.95	7.29		7.19	7.36	7.18	8.07	12.27				
				9.85						8.27					
Los Angeles	.20	7.40	9.25	9.55	7.75		7.35	7.55	7.35	10.05		13.20		16.35	
				9.85					7.45						
Memphis	.10	6.79	7.69		6.90		7.01	7.09	6.88	8.24					
Milwaukee	.20	6.47	7.47	8.21	6.71		6.61	6.86	6.60	7.69	12.34	11.99	14.69	14.64	
				8.39									14.84		
New Orleans	.15	6.70	7.65	9.23	6.80		6.90	7.05	6.80	8.70					
							6.95			10.70					
New York	.10	6.97	7.78	8.79	7.36		7.16	7.13	7.30	8.63	12.63	12.28		14.93	
		6.98	8.46	8.99	7.56		7.27	7.38	7.37	8.73 ²					
Norfolk	.20	7.00			7.10		7.10	7.10	7.10	8.60					
Philadelphia	.25	6.19	7.29	8.09	6.96		6.49	6.54	6.74	8.19		11.66		14.61	
			7.84	8.23								11.96			
Pittsburgh	.20	6.38	7.38	8.30	6.72		6.52	6.69	6.51	7.85	12.25	11.90	14.60	14.55	
				8.50	6.75										
Portland	.20	7.60	8.75	9.05	7.85		7.45	7.50	7.55	10.95					
Salt Lake City	.20	7.65	10.20	10.70	9.05		7.70	7.70	8.80	10.95					
								8.85							
San Francisco	.15	7.55	8.95	9.35	7.80		7.40	7.50	7.35	10.05		13.20		16.35	
				9.85											
Seattle	.20	8.10	9.80	10.15	8.20		7.80	7.75	7.80	10.95		13.65		16.30	
St. Louis	.20	6.62	7.67	8.54	6.91		6.81	7.09	6.80	7.89	12.54	12.19	14.84	14.45	
		6.67		8.59									14.89	14.84	
St. Paul	.15	7.03	8.03	8.96	7.28		7.19	7.35	7.16	8.26		12.56		15.21	
			8.58												

Miscellaneous Prices

(Effective Aug. 10, 1954)

TOOL STEEL

F.o.b. Mill

W	Cr	V	Mo	Co	Base per lb
18	4	1	—	—	\$1.54
18	4	1	—	5	2.185
18	4	2	—	—	1.705
18	4	1.5	8	—	.90
6	4	2	6	—	1.29
High-carbon chromium					
Oil hardened manganese					
Special carbon					
Extra carbon					
Regular carbon					
Warehouse prices on and east of Mis-					
sissippi are 3.5¢ per lb higher. West of					
Mississippi, 5.5¢ higher.					

CAST IRON WATER PIPE

	Per Net Ton
6 to 24-in., del'd Chicago	\$111.80 to \$115.30
6 to 24-in., del'd N. Y.	115.00 to 116.00
6 to 24-in., Birmingham	98.00 to 102.50
6-in. and larger f.o.b. cars, San Francisco, Los Angeles, for all rail shipments; rail and water shipments less	\$129.50 to \$131.50
Class "A" and gas pipe, 5¢ extra; 4-in. pipe is \$5 a ton above 6-in.	

LAKE SUPERIOR ORES

51.50% Fe; natural content, delivered lower Lake ports. Prices effective July 1, 1953, to end of 1954 season.

	Gross Ton
Openhearth lump	\$11.15
Old range, bessemer	10.30
Old range, nonbessemer	10.15
Mesabi, bessemer	10.05
Mesabi, nonbessemer	9.90
High phosphorus	9.90

Prices based on upper Lakes rail freight rates, Lake vessel freight rates, handling and unloading charges, and taxes thereon, in effect on June 24, 1953. Increases or decreases after such date are for buyer's account.

COKE

	Net-Ton
Furnace, beehive (f.o.b. oven)	\$14.25 to \$14.50
Foundry, beehive (f.o.b. oven)	
Foundry, oven coke	\$16.50 to \$17.00
Buffalo, del'd	\$28.08
Chicago, f.o.b.	24.50
Detroit, f.o.b.	25.50
New England, del'd	26.05
Seaboard, N. J., f.o.b.	24.00
Philadelphia, f.o.b.	23.00
Swedeland, Pa., f.o.b.	23.00
Painesville, Ohio, f.o.b.	24.00
Erie, Pa., f.o.b.	25.00
Cleveland, del'd	27.43
Cincinnati, del'd	26.56
St. Paul, f.o.b.	23.75
St. Louis, f.o.b.	26.00
Birmingham, f.o.b.	22.65
Lone Star, Tex., f.o.b.	18.50

ELECTRODES

Cents per lb, f.o.b. plant, threaded, with nipples, unboxed

GRAPHITE			CARBON		
Diam. (in.)	Length (in.)	Price	Diam. (in.)	Length (in.)	Price
24	84	20.50	40	100, 110	8.95
20	72	20.00	35	110	8.95
12 to 18	72	20.50	30	110	8.95
7 to 10	80	21.00	24	72 to 84	9.10
8	60	23.25	20	90	8.95
4	40	26.00	17	72	9.10
3	40	27.25	14	72	9.50
2 1/2	30	28.00	10, 12	60	10.30
2	24	43.50	8	60	10.55

BOLTS, NUTS, RIVETS, SCREWS

(Base discount, f.o.b. mill)

Machine and Carriage Bolts

	Discount	Less Case	C.
1/2 in. & smaller x 4 in. & shorter	2	22	
1/2 in. & smaller x 6 in. & shorter	+3	18	
9/16 in. & 5/8 in. x 6 in. & shorter	+4	17	
3/4 in. & larger x 6 in. & shorter	+6	15	
All diam. longer than 6 in. & 1/2 in. & smaller x 6 in. & shorter	+3	18	
Lag, all diam. x 6 in. & shorter	6	25	
Lag, all diam. longer than 6 in.	+2	19	
Plow bolts	23	23	

Stove Bolts

Packaged, package list	44 1/2—10
Bulk bulk list*	59
*Minimum quantity per item: 15,000 pieces lengths to 3"; 5,000 pieces lengths over 3". Special finishes: Zinc, Parkerized, cadmium or nickel add 6¢ per lb net. Black oil finish add 2¢ per lb net.	

Nuts, H.P., C.P., reg. & hvy.

	Base Discount	Discount, Case or Keg
3/4" or smaller	55	64
7/8" to 1 1/4" inclusive	58	66
1 1/2" to 1 3/4" inclusive	60	67 1/2

C.P. Hex regular & hvy.

All sizes	55	64
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Hot Galv. Nuts (all types)

3/4" or smaller	38	50
7/8" to 1 1/4" inclusive	41	52 1/2

Finished, Semi-finished, Slotted or Castellated Nuts

All sizes	55	66
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Rivets

	Base per 100lb	Pct Off List
1/2 in. & larger	\$9.25	
7/16 in. and smaller	37	

Cap Screws

	Bright	H.C. Heat Treated
New std. hex head, packaged		
5/8" x 6" and smaller and shorter	38	28
3/4" x 6" and shorter	15	1
New std. hex head, bulk*		
5/8" x 6" and smaller and shorter	50	42
3/4" x 6" and shorter	32	21
*Minimum quantity per item: 15,000 pieces 5/8", 5/16", 3/8" diam. 5,000 pieces 7/16", 1/2", 9/16", 5/8" diam. 2,000 pieces 3/4", 7/8", 1" diam.		

Machine Screws

	Discount
Packaged, gross list	44 1/2—10
Bulk, bulk list*	17
*Minimum bulk quantity, 15,000 pieces per item.	

Machine Screw & Stove Bolt Nuts

Packaged, package list	36—10
Bulk, bulk list*	17
*Minimum bulk quantity, 15,000 pieces per item.	

REFRACTORIES

Fire Clay Brick

Carloads per 1000

First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add \$5.00) ..	\$109.00
No. 1 Ohio	102.00
Sec. quality, Pa., Md., Ky., Mo., Ill.	102.00
No. 2 Ohio	93.00
Ground fire clay, net ton, bulk (except Salina, Pa., add \$1.50)	16.00

Silica Brick

Mt. Union, Pa., Ensley, Ala.	\$115.00
Childs, Hays, Pa.	120.00
Chicago District	125.00
Western Utah	131.00
California	138.00
Super Duty	
Hays, Pa., Athens, Tex., Windham	132.00
Curtner, Calif.	150.00
Silica cement, net ton, bulk, Eastern (except Hays, Pa.)	19.00
Silica cement, net ton, bulk, Hays, Pa.	21.00
Silica cement, net ton, bulk, Chicago District, Ensley, Ala.	20.00
Silica cement, net ton, bulk, Utah and Calif.	28.50

Chrome Brick

Per net ton

Standard chemically bonded Balt.	\$86.00
Standard chemically bonded, Curtner, Calif.	96.25
Burned, Balt.	80.00

Magnesite Brick

Standard Baltimore	\$109.00
Chemically bonded, Baltimore	97.50

Grain Magnesite

St. %-in. grains

Domestic, f.o.b. Baltimore in bulk fines removed	\$64.40
Domestic, f.o.b. Chewelah, Wash., Luning, Nev.	
in bulk	38.00
in sacks	43.75

Dead Burned Dolomite

Per net ton

F.o.b. bulk, producing points in: Pa., W. Va., Ohio	\$14.50
Midwest	14.60
Missouri Valley	13.65

FLUORSPAR

Washed gravel, f.o.b. Rosiclare, Ill. Price, net ton; effective CaF ₂ content	
72 1/2%	\$44.00
70% or more	42.50
60% or less	38.00

METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots, for minus 100 mesh.

Swedish sponge iron c.i.f. New York, ocean bags ..	11.25¢
Canadian sponge iron, Del'd in East	12.0¢
F.o.b. ship, pt., carloads ..	9.5¢
Domestic sponge iron, 98+% Fe, carload lots	18.0¢
Electrolytic iron, annealed, 99.5+% Fe	38.0¢
Electrolytic iron, unannealed, minus 325 mesh, 99+% Fe ..	53.5¢
Hydrogen reduced iron minus 300 mesh, 98+% Fe, 63.0¢ to 80.0¢	
Carbonyl iron, size 5 to 10 micron, 98%, 00.8+% Fe ..	\$3.0¢ to \$1.48
Aluminum	31.5¢
Brass, 10 ton lots	29.50¢ to 36.50¢
Copper, electrolytic	43.50¢
Copper, reduced	43.50¢
Cadmium, 100-199 lb. 95¢ plus metal value	
Chromium, electrolytic, 99% min., and quality, del'd ..	\$3.60
Lead	21.00¢
Manganese	57.0¢
Molybdenum, 99%	\$2.75
Nickel, unannealed	89.50¢
Nickel, annealed	96.50¢
Nickel, spherical, unannealed ..	93.50¢
Silicon	43.50¢
Solder powder, 7.0¢ to 9.0¢ plus met. value	
Stainless steel, 302	91.0¢
Stainless steel, 316	\$1.10
Tin	14.04¢ plus metal value
Tungsten, 99% (65 mesh) ..	\$4.65
Zinc, 10 ton lots	17.5¢ to 25.0¢

Ferroalloy Prices

(Effective Aug. 10, 1954)

Ferrochrome

Contract prices, cents per lb contained Cr, lump size, bulk, in carloads, delivered.
65-72 Cr, 2% max. Si.
0.025% C ... 34.50 0.20% C ... 33.50
0.06% C ... 34.50 0.50% C ... 33.25
0.10% C ... 34.00 1.00% C ... 33.00
0.15% C ... 33.75 2.00% C ... 32.75
65-69% Cr, 4.9% C ... 24.75
62-66% Cr, 4.6% C, 6-9% Si ... 25.60

S. M. Ferrochrome

Contract prices, cents per pound, chromium contained, lump size, delivered.
High carbon type: 60.65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.
Carloads ... 25.85
Ton lots ... 28.00
Less ton lots ... 29.50

High-Nitrogen Ferrochrome

Low-carbon type 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 3¢ for each additional 0.25% of N.

Chromium Metal

Contract prices, per lb chromium contained, packed, delivered, ton lots, 97% min. Cr, 1% max. Fe.
0.10 max. C ... \$1.18
0.50% max. C ... 1.14
9 to 11% C ... 1.11

Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-49%, C 0.05% max.)
Contract price, carloads, f.o.b. Niagara Falls, freight allowed, lump 4-in. x down, 24.75¢ per lb contained Cr plus 10.80¢ per lb contained Si. Bulk 2-in. x down, 25.05¢ per lb contained Cr plus 10.80¢ per lb contained Si. Bulk 1-in. x down, 25.25¢ per lb contained Cr plus 11.00¢ per lb contained Si.

Calcium-Silicon

Contract price per lb of alloy, lump, delivered.
30-33% Cr, 60-65% Si, 3.00 max. Fe.
Carloads ... 19.00
Ton lots ... 22.10
Less ton lots ... 23.60

Calcium-Manganese-Silicon

Contract prices, cents per lb of alloy, lump, delivered.
16-20% Ca, 14-18% Mn, 53-59% Si.
Carloads ... 20.00
Ton lots ... 22.30
Less ton lots ... 23.30

SMZ

Contract price, cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe ½ in. x 12 mesh.
Ton lots ... 17.50
Less ton lots ... 19.50

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, V-5; 38-42% Cr, 17-19% Si, 8-11% Mn, packed.
Carload lots ... 16.60
Ton lots ... 18.10
Less ton lots ... 19.35

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, Si 48 to 52%; Ti 9 to 11%, Ca 5 to 7%.
Carload packed ... 17.50
Ton lots to carload packed ... 18.50
Less ton lots ... 20.00

Ferromanganese

Maximum contract base price, f.o.b., lump size, base content 74 to 76 pct Mn: Cents per-lb

Producing Point
Marrietta, Ashtabula, O.; Alloy, W. Va.; Sheffield, Ala.; Portland, Ore.
Clairton, Pa. ... 10.00
Sheridan, Pa. ... 10.00
Philo, Ohio ... 10.00

Add or subtract 0.1¢ for each 1 pct Mn above or below base content.

Briquets, delivered, 66 pct Mn:
Carloads, bulk ... 12.50
Ton lots packed ... 14.05

Spiegeleisen

Contract prices, per gross ton, lump, f.o.b. Palmerton, Pa.
Manganese Silicon
16 to 19% 3% max. ... \$84.00
19 to 21% 3% max. ... 86.00
21 to 23% 3% max. ... 88.50
23 to 25% 3% max. ... 91.00

Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.
95.50% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.
Carload, packed ... 36.95
Ton lots ... 38.45

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.
Carloads ... 30.00
Ton lots ... 32.00
250 to 1999 lb ... 34.00
Less than 250 lb ... 37.00
Premium for hydrogen-removed metal ... 0.75

Medium Carbon Ferromanganese

Mn 80% to 85%, C 1.25 to 1.50. Contract price, carloads, lump, bulk, delivered, per lb of contained Mn ... 21.35¢

Low-Carb Ferromanganese

Contract price, cents per pound Mn contained, lump size, del'd Mn 85-90%.
Carloads Ton Less
0.07% max. C, 0.06% P, 90% Mn ... 30.00 31.85 33.05
0.07% max. C ... 27.95 29.80 31.00
0.15% max. C ... 27.45 29.30 30.50
0.30% max. C ... 26.95 28.80 30.00
0.50% max. C ... 26.45 28.30 29.50
0.75% max. C, 80-85% Mn, 5.0-7.0% Si ... 23.45 25.30 26.50

Silicomanganese

Contract basis, lump size, cents per pound of metal, delivered, 65-68% Mo, 18-20% Si, 1.5% max. C for 2% max. C, deduct 0.2¢.
Carload bulk ... 11.00
Ton lots ... 12.65
Briquet contract basis carlots, bulk, delivered, per lb of briquet ... 12.65
Ton lots, packed ... 14.25

Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct, f.o.b. Keokuk, Iowa, or Wenatchee, Wash., \$92.00 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., \$89.50. Add \$1.00 per ton for each additional 0.50% Si up to and including 17%. Add \$1.45 for each 0.50% Mn over 1%.

Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, packed.
Ton lots Carloads
96% Si, 2% Fe ... 20.10 18.00
97% Si, 1% Fe ... 20.60 18.50

Silicon Briquets

Contract price, cents per pound of briquets, bulk, delivered, 40% Si, 2 lb Si
Carloads, bulk ... 6.30
Ton lots ... 7.90

Electric Ferrosilicon

Contract price, cents per lb contained Si, lump, bulk, carloads, delivered.
25% Si ... 20.00 75% Si ... 13.80
60% Si ... 10.80 85% Si ... 15.55
65% Si ... 12.20 90.55% Si ... 17.00

Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered.
Cast Turnings Distilled
Ton lots ... \$2.05 \$2.95 \$3.75
Less ton lots ... 2.40 3.30 4.55

Ferrovandium

35-55% contract, basis, delivered, per pound, contained V.
Openhearth ... \$3.00-\$3.10
Crucible ... 3.10-3.20
High speed steel (Primos) ... 3.20-3.25

Alsiifer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Suspension Bridge, N. Y., per lb.
Carloads ... 9.25¢
Ton lots ... 10.15

Calcium molybdate, 46.3-46.6% f.o.b. Langeloth, Pa., per pound contained Mo ... \$1.15

Ferrocolumbium, 50-60%, 2 in. x D contract basis, delivered per pound contained Cb.
Ton lots ... \$9.50
Less ton lots ... 9.55

Ferro-tantalum-columbium, 20% Ta, 40% Cb, 0.30% C, contract basis, del'd, ton lots, 2-in. x D per lb cont'd Cb plus Ta ... \$4.75

Ferromolybdenum, 55-75%, f.o.b. Langeloth, Pa., per pound contained Mo ... \$1.21

Ferrophosphorus, electric, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., \$4.00 unitage, per gross ton ... \$96.00
10 tons to less carload ... \$110.00

Ferrotitanium, 40% regular grade, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti ... \$1.35

Ferrotitanium, 25% low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti ... \$1.50
Less ton lots ... 1.55

Ferrotitanium, 15 to 18% high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload, per net ton ... \$177.00

Ferrotungsten, ¼ x down, packed, per pound contained W, ton lots, f.o.b. ... \$3.80

Molybde oxide, briquets or cans, per lb contained Mo, f.o.b. Langeloth, Pa. ... \$1.14
bags, f.o.b. Washington, Pa., Langeloth, Pa. ... \$1.12

Simnal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per lb.
Carload, bulk, lump ... 15.50¢
Ton lots, packed lump ... 16.75¢
Less ton lots, lump, packed ... 17.25¢

Vanadium Pentoxide, 86-89% V₂O₅ contract basis, per pound contained V₂O₅ ... \$1.23

Zirconium, contract basis, per lb of alloy
35-40%, f.o.b., freight allowed, ton lots ... 21.00¢
12-15%, del'd, lump, bulk-carloads ... 8.00¢

Boron Agents

Borosil, contract prices per lb of alloy del. f.o.b. Philo, Ohio, freight allowed. B, 3-4%, Si, 40-45%, per lb contained B ... \$5.25

Bortam, f.o.b. Niagara Falls
Ton lots, per pound ... 45¢
Less ton lots, per pound ... 50¢

Corbortam, Ti 15-21%, B 1-2%, Si 2-4%, Al 1-2%, C 4.5-7.5%, f.o.b. Suspension Bridge, N. Y., freight allowed.
Ton lots per pound ... 10.00¢

Ferroboration, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in., x D, Ton lots ... \$1.20
F.o.b. Wash., Pa.; 100 lb up
10 to 14% B85
14 to 19% B ... 1.20
19% min. B ... 1.50

Grinal, f.o.b. Bridgeville, Pa. freight allowed, 100 lb and over
No. 1 ... \$1.00
No. 6 ... 63¢
No. 79 ... 50¢

Manganese-Boron, 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd.
Ton lots ... \$1.46
Less ton lots ... 1.57

Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, del'd, less ton lots ... \$2.05

Sileax, Contract basis, delivered
Ton lots ... 45.00¢

Buy a Wysong... It's Miles Ahead

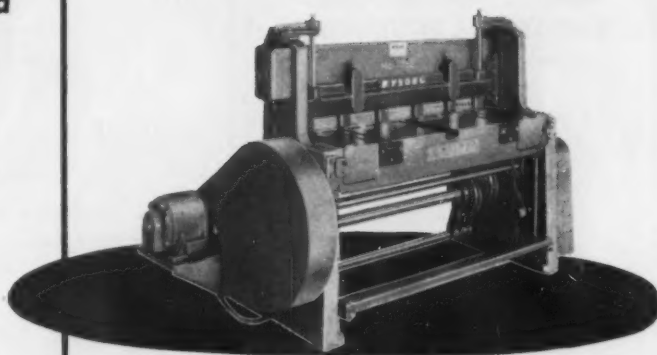
Wysong builds a complete line of Squaring Shears in Power, Air-Power and Foot-Power Models. All Wysong squaring shears feature rigid construction, with Hi-tensile castings. Rigid construction assures less deflection, more accurate alignment . . . a longer life of accurate shearing. See your dealer or write to factory for full information.



Squaring Shears... Bending Rolls

WYSONG

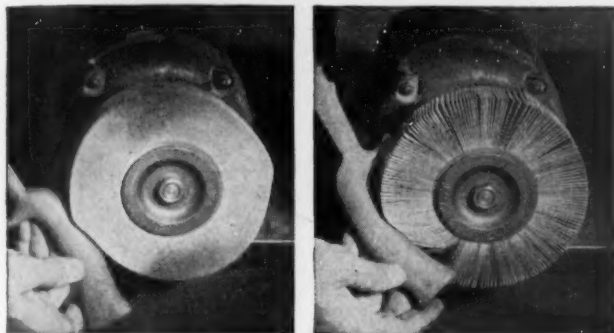
Wysong and Miles Company, Greensboro, N. C.



Wysong No. 1252,
Capacity 52 Inches, 12 Gauge, Mild Steel.

GRIND-O-FLEX

the new flexible
GRINDING WHEEL



- ★ Removes burrs, flash, tool marks from irregular surfaces
- ★ Will not "flat" or dig into contoured shapes
- ★ Finishes metals, plastics; satin finishes stainless steel
- ★ Requires no special equipment, attaches to power tools
- ★ Safe and easy to use, requires no skill or experience
- ★ Comes in a wide variety of aluminum-oxide grits
- ★ See your Industrial Supply Dealer or write for catalog

MERIT PRODUCTS, INC.

4023 Irving Place, Culver City, California

Manufacturers of
**SAND-O-FLEX and
GRIND-O-FLEX**
abrasive tools

Where else can you find such

**BUCKET STAMINA,
LOAD CAPACITY,
DIGGING POWER!**

Yes you're looking at a man-size Hayward Electric Bucket! Every user acclaims it as the finest hook-on bucket. Nothing like it for foundries, steel mills, power plants. Interchangeable with your electric magnet. The Hayward Company, 50 Church St., New York 7, N. Y.

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CLAM SHELL • ELECTRIC • ORANGE PEEL • GRAPPLES
famous for performance since 1888

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COLD ROLLED STRIP STEEL

$\frac{1}{2}$ " to 19" Wide
.002 to .500 Thick

Desired quality for
forming and drawing.
Consult with us on
your next cold rolled
strip steel require-
ments.

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CHARLES L. LEWIS, 2450 17th St.,
San Francisco 10, Cal.; J. J. LAM-
BERT, 323 Huntington Ave., Buffalo,
N. Y.; JOHN E. LOVE, 2832 East
Grand Blvd., Detroit 11, Michigan.

CENTRAL STEEL & WIRE COMPANY

13400 North Mt. Elliott 3000 West 51st St.
Detroit 12, Mich. Chicago 80, Ill.
Box 148 Annex Station
Cincinnati 14, Ohio

GRIFFIN MANUFACTURING CO. • ERIE, PA.

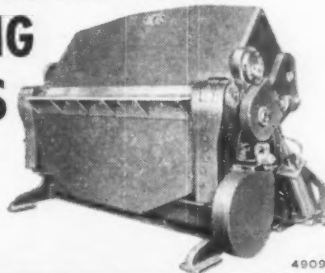
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For Single and Quantity Runs
Bending Steel Plate and Sheet
Metal

Special Bending Brakes
Double Folder Brakes



DREIS & KRUMP
MANUFACTURING COMPANY

7430 S. Loomis Blvd., Chicago 36, Ill.



STEEL BENDING BRAKES
BOX AND PAN BRAKES
FOLDING BRAKES

REBUILT—GUARANTEED ELECTRICAL EQUIPMENT

DIRECT CURRENT MOTORS

230-V.D.C.					
Qu.	HP	Make	Type	RPM	
14*	3000	Whse.	MIII	600	
14*	1500	Whse.	MIII	600	
10*	800	Whse.	MIII	600	
1	700	Whse.	MIII	325/700	
1	350	G.E.	CD-109	1150	
1	250	G.E.	MPC	325/975	
1	200/350	G.E.	MPC	300/900	
1	200/350	El. Dy.	Size 22	400/1200	
1	200	Whse.	MIII	300/1200	
1	180	G.E.	MPC	400	
1	160/90	G.E.	MPC	625/1125	
1	125	Whse.	SK-190	600	
2	125	Whse.	SK-184	575/850	
2	100	El. Dy.	80-S	450/1100	
6	75	T.E.F.C.	C.W. 534	860	
1	50	Whse.	SK	250/1000	
1	40	Whse.	SK-140	500/1700	
1	35	G.E.	CD-125	400/1200	
1	35	G.E.	CD-147	300/1200	

*—525 and 600 V. D.C.

MOTOR GENERATOR SETS

Qu.	K.W.	Make	RPM	Volts DC	Volts AC
1 (3U)	2400	Whse.	720	600	4800/2400
2	1750	G.E.	450	250	4600/2300
2	1200	Whse.	720	600	3200
2	600	C.W.	720	575	2300/440
4	400	C.W.	1200	125/250	2300/440
1	400	C.W.	720	250	2300/440
1	300	Whse.	900	250	2300
1	150	G.E.	720	250	2300/440
1	100	Ridgway	1200	275	4000/2300
1	100	C.W.	1200	125	440/220
1	100	Whse.	900	250	2300

CRANE & MILL MOTORS

230-V.D.C.					
Qu.	HP	Make	Type	RPM	
1	285/300	G.E.	MDP-420	350/410	
2*	187	G.E.	MDS-418	435	
1	150/200	Whse.	MCA-100	270/300	
4*	140/100	G.E.	MCA-100	430/500	
2	140/100	Whse.	MCA-90	500/415	
1	110/85	Whse.	MCA-80	520/450	
4	90/70	Whse.	MCB-70	440/400	
1	85/65	G.E.	CO-1811	600/500	
1	80/54	C.W.	F.W.	575/480	
1	65/50	Whse.	MCA-60	475/425	
1	50	G.E.	CO-1830	825	
1	50	G.E.	CO-1829	750	
1	50	G.E.	CO-1810	725	
2	45/57	Whse.	K-9	315-470	
2	35/45	G.E.	CO-1810	500/450	
1	35	G.E.	MCA-104%	850	
2	35/50	G.E.	CO-1829	750/850	
2	35	G.E.	MDS-410	525	
4	40/30	Whse.	MCA-50	525/440	
4	30/40	Whse.	MCB-50	525/440	
2	35/25	G.E.	MDS-408	575/500	
2	20/25	Whse.	MCA-40	650/550	

*Compound wound, all other series

SLIP RING MOTORS

Constant Duty 3 phase 60 cycle					
Qu.	HP	Make	Type	Volts	RPM
1**	1800	G.E.	MT-498	2300	357
1**	1200	G.E.	MT-26	2200	277
1	700	G.E.	I-M	2300	400
1*	600	G.E.	MT-20	2300	360
1**	500	Al. Ch.	ANY	2200	514
2	500	G.E.	I-16-M	2300	450
2	400	G.E.	MT-412	2200	450
1	300	G.E.	I-M	2300	600
1	250	Whse.	CW-937	440	1200
1	250	G.E.	MT-414	2300	300
1	250	Al. Ch.	ARY	440	720
2	100	G.E.	I-15-M	2300	514

SQUIRREL CAGE MOTORS

3 phase 60 cycle					
Qu.	HP	Make	Type	Volts	RPM
1	400	G.E.	IK	2300	514
1	200	Whse.	CR 890	2300	1750
1	200	Al. Ch.	A.R.	440/220	580
1	200	Whse.	CR 873 C	2300	1160
2	125	Al. Ch.	A.R.	2300	1750
1	125	Al. Ch.	A.R.	2300	490
1	100	G.E.	KT 562	440/220	576
1	100	Whse.	CR 838	2300	495

SYNCHRONOUS MOTORS

3 phase 60 cycle					
Qu.	HP	Make	PF	Volts	RPM
1	2000	Whse.	80	4800/2400	720
2	2100	G.E.	100	2300	360
2	2000	G.E.	80	2300	720
1	1750	G.E.	100	2200	3600
1	750	G.E.	80	2300	450
1	710	G.E.	80	2300/440	720
1	250	G.E.	100	2300	514
1	250	G.E.	80	2300	600
2	200	Whse.	80	440/220	1200
1	187	G.E.	80	440/220	720
1	150	G.E.	100	2200	900
1	150	G.E.	80	440/220	450
2	125	G.E.	80	4000/2200	1200
1	125	G.E.	80	2200	900
2	100	Whse.	80	440	1800
2	100	G.E.	80	440/220	600

10 Ton Champion, overhead crane, 95' span or less, will furnish rebuilt for 440/220 volt, 3 phase, 60 cycle or 230 VDC, high speed particularly adaptable for outdoor service, 45' lift.

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THE CLEARING HOUSE

News of Used and Rebuilt Machinery

Ohio Business Slow . . . Vacations, a brighter international picture and continued buyer apathy have combined to keep used machinery sales at a minimum in both Cleveland and Cincinnati.

Vacation cycle has eaten into production schedules and dealers say it has hurt. However some rebuilders, particularly in the Cleveland area, say vacation maintenance programs have resulted in an improvement in demand for all purpose tools. Summer retooling so far has not affected heavy machinery and materials handling equipment to a large extent.

Most dealers in the Ohio area insist that this is the worst summer they have experienced in the past 5 years. Those interviewed by THE IRON AGE issued conflicting reports on inquiry rates. But whether the individual dealer is pleased or sad about interest in his stock, one thing is certain; every inquiry has to be followed up with hard selling.

Drive Hard Bargain . . . Although asking prices have plunged within the past year, sale of everything from gear cutters to fractional horsepower motors is usually accompanied by really stiff bargaining. A few dealers who have been able to pick up late-model postwar machinery report that they have been able to make fairly good profits.

Demand generally is confined to medium-sized plants employing in the neighborhood of 1500 to 2000 employees. Small shops are dead and the bigger operators are showing interest only in new equipment. Their buying patterns are in new order index for machine tools. In June the index jumped over 45 points as the machine tool builders met with a great deal of success in their drive to sell modernization.

Inventories in this area can generally be described as very lean. A scattered handful of dealers say

they are presently adding to their stock but their optimism is not wide spread. Newsworthy thing about inventories in this area is the new look. For the past year most firms have been pruning out old tools and taking a loss to do it. Increasing availability of late models finds most dealers fairly well stocked with salable items.

Plant expansion in the Cleveland area is still contributing modestly to used machinery volume but it hasn't been the factor many predicted in the early spring.

Optimism In Pittsburgh . . . A tentative feeling of confidence pervades the trade in the Pittsburgh district. But it is based largely on negative rather than positive factors.

As one dealer put it, customers are no longer talking about how poor business is—they're looking a little toward the time when activity perks up. They're convinced that bottom of the dip has been reached, that the only way things can turn from now on is up.

One machine tool broker-dealer reports that July probably was the low point for him. He says his business is picking up for August, not much, but enough to encourage him. Inquiries are more plentiful, and interest is spread over both structural and machine tools. A definite trend has not set in, but he looks for September-October to show decided improvement.

Buyers continue to drive a hard bargain and price is still a primary selling point.

Mill Equipment Slow . . . Demand for steel mill equipment is slow. One leading dealer has branched out into a "sideline"—an air-actuated shear—that is rapidly becoming more important to him than used equipment. Otherwise business is extremely dull, and only an occasional job comes along to brighten the picture.